User's Manual

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Nutrient Management Software

V.1.28

NutMan

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NutMan version 1.28 User Guide

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Chapter 1. Getting Started

Welcome to NutMan. This chapter tells you what is in your NutMan package, what equipment you need, and what you need to know to use this program. This manual is designed to teach the first-time user how to install and run NutMan. This manual assumes that you are familiar with your operating system, Microsoft Windows 3.x or Windows 95/NT.

What is NutMan?

NutMan is a program that helps nutrient management planners develop plans. Nutrient management involves the allocation of nutrients to crop fields and pastures so that plants receive adequate nutrient at appropriate times, manure is allocated efficiently, and both costs and environmental risks are minimized.

The fundamentals of such planning are described in "Virginia Nutrient Management Standards and Criteria", Department of Conservation and Recreation, Richmond, Virginia, revised November, 1995.

You should be familiar with these standards and criteria before you use NutMan.

Hardware and Software Requirements

- A personal computer running Microsoft Windows 3.1 or higher, Windows 95, or Windows NT
- A 3-1/2" floppy disk drive
- A hard disk with a minimum of 4MB free space
- At least 16 MB of RAM

Printer

NutMan will print to any correctly installed printer through the Windows 3.x or Windows 95/NT operating systems. To print NutMan reports you may have to change the properties in your printer settings to 300dpi.

What is in the package?

1. One 3-1/2" floppy disk
2. License Agreement and Warranty Information
3. This manual

What is in this manual?

This manual is organized into eight chapters: Getting Started, Installing NutMan, Using NutMan, Describing a Farm, Manure Production, Biosolids, Nutrient Applications, and Plan Output.

Conventions used in this manual:

1. Instructions in this *italicized font* are commands that you enter. For example, 'At the DOS prompt, enter *NutMan*', would require you to type in the word *NutMan* at the prompt and hit the ENTER or RETURN key on your keyboard.
2. Items in quotation marks (" ") refer to file and directory names, program window titles, menu titles, menu options, or button names. For example: 'Click on the program group called “NutMan”' - refers to an item on your windows desktop called NutMan.
3. Items that follow this hand symbol are tips describing shortcuts or alternate ways of doing things in the program.
4. Items that follow this caution symbol describe possible pitfalls and/or remind you of important information.

Chapter 2. Installing NutMan

Before You Install

1. Read the file called “Readme.txt”, to look for any last minute changes or notes released after this manual was published.
2. Make a backup copy of this software and keep the original at a safe place.
3. Make sure you meet all the hardware and memory requirements.

Installation

The following instructions assume that you have started your computer. The installer will copy files to a directory you specify. *C:\NutMan* is the default. The installer will create a new directory if you specify one.

To Install in Windows 3.x

Insert NutMan installation disk into drive A or B. In Windows 3.x, open the Program Manager. Choose “Run...” from the “File” menu. In the opened dialog box (Figure 2.1) type A:\setup.exe and hit RETURN or ENTER on your keyboard (if your drive letter is “B” then type B:\setup.exe in the dialog box).

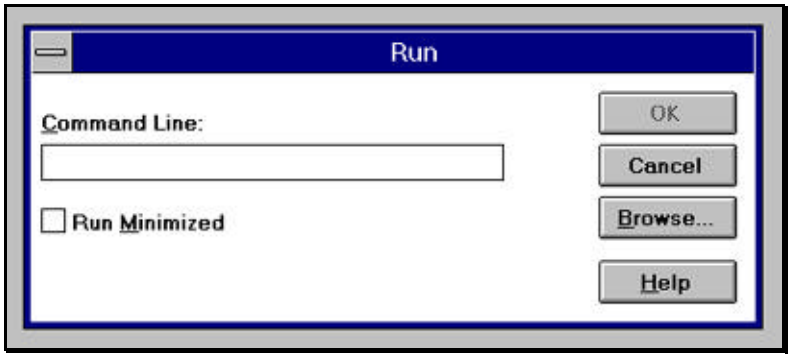

Figure 2.1 To install NutMan from Windows 3.1 choose “Run” from the File Menu in the "Program Manager" window. Type in *A:\setup.exe* in the space provided and click on "OK".

To Install in Windows 95 or Windows NT

From the “Start” menu choose “Run...” and in the dialog box (Figure 2.2) that opens, type *A:\setup.exe* and click on the “OK” button.

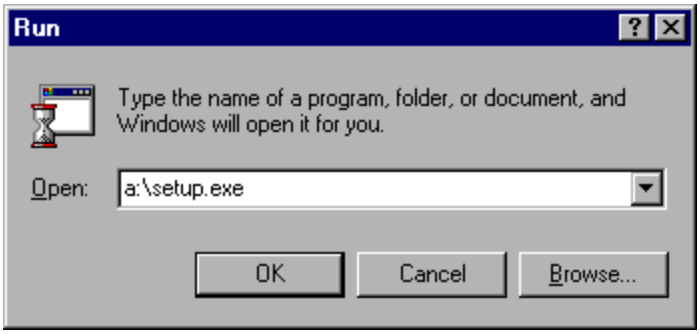

Figure 2.2 To install NutMan in Windows 95 or NT choose “Run” from the “Start” Menu. Type *A:\setup.exe* in the space provided and click on "OK".

This program installs NutMan onto your hard drive and adds a shortcut to NutMan in the “Programs” section of your Windows “Start” menu.

Chapter 3. Using NutMan

What You Should Know

NutMan does many calculations for you, but you, as the planner, are still responsible for the accuracy and appropriateness of your plans. You will find that NutMan allows you to override default values and even make mistakes. Make sure you review the information in your plans thoroughly.

Getting Help

Select "Index" from the NutMan "Help" menu or click on the "Help" button (the one with a question mark and arrow) in the toolbar.

Launching NutMan

For Windows 3.x Users

In the "Program Manager" window locate the program group called "NutMan Application". Double-click that icon with the left mouse button and a window with a "NutMan Application" icon in it will open (see Figure 3.1). Double-click the "NutMan Application" icon to launch the NutMan Application.

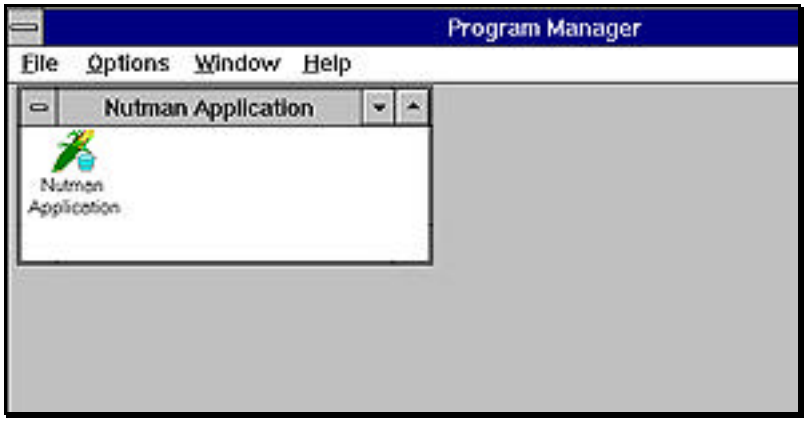

Figure 3.1. Program Manager window and NutMan Application program .

For Windows 95 or Windows NT Users

Go to the "Start" menu, choose "Programs", then choose “NutMan Application” and finally “nutrient.exe”.

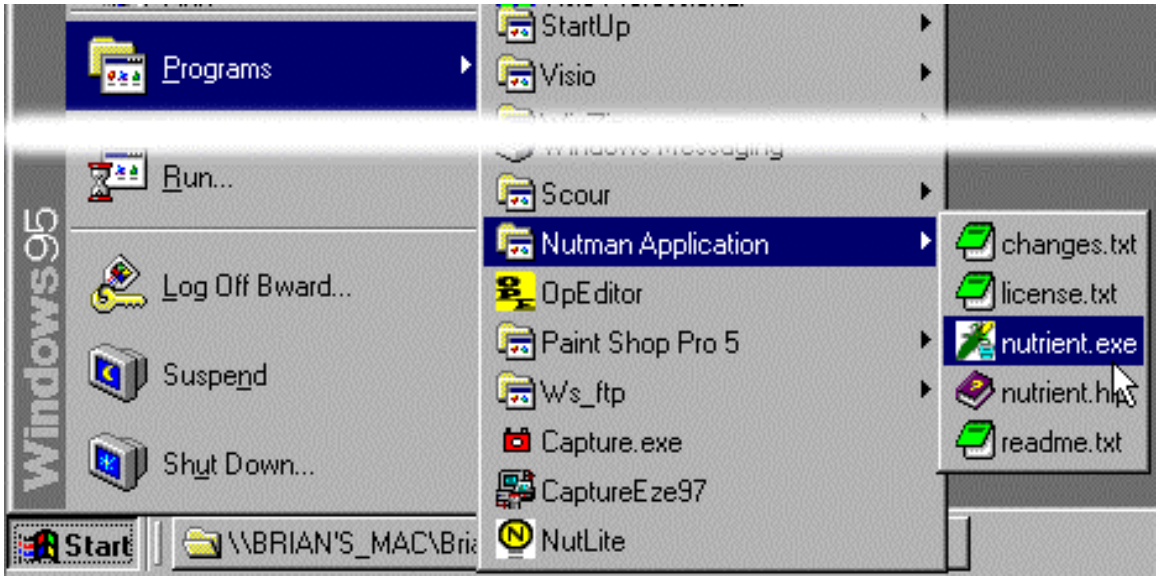

Figure 3.2 Launching NutMan from Windows 95 or Windows NT.

Authorization

Each nutrient management specialist is assigned a unique certification number and authorization code. Every time you launch NutMan you will be prompted for your certification number and authorization code. This is accomplished by the following authorization screen.

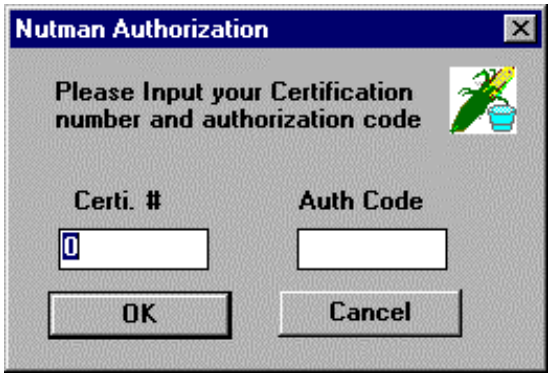

Figure 3.3 NutMan Authorization Dialog.

After you enter the required information, the program checks to see that you are a certified user. First-time users will be prompted for some personal information in order to personalize their copy of the program.

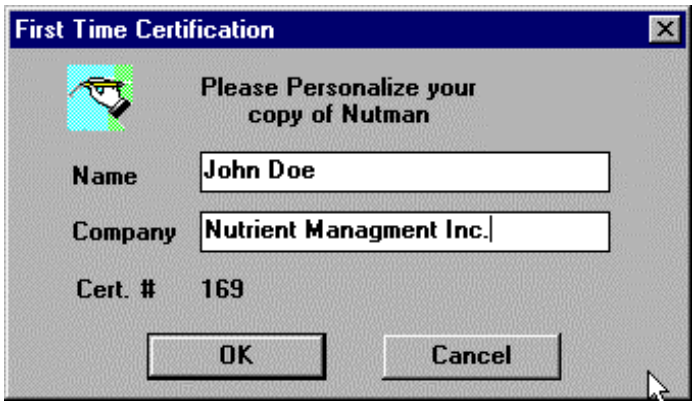

Figure 3.4 Personalize your copy of NutMan using this dialog box.

After you enter this information the program prompts for a confirmation of your name and the company you work for.

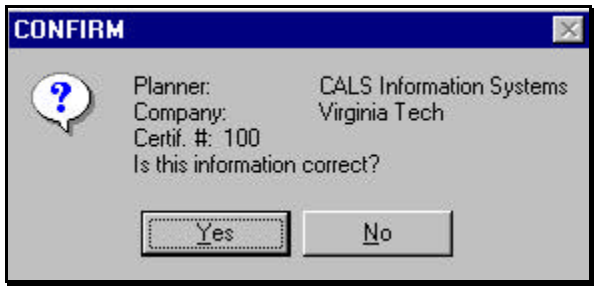

Figure 3.5 Confirmation Dialog.

Click on “Yes” to launch NutMan or “No” to go back to the “First Time User” dialog. Failure to enter proper certification number and/or authorization code will result in plans that are not State Certified. You will be given an option to “Retry” your certification attempt through the following dialog box.

If you do not have the proper authorization code, then you will be asked to contact the Virginia Department of Conservation and Recreation for a new code.

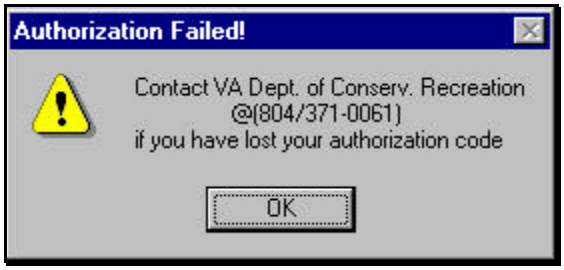

Figure 3.6 Failed Authorization.

You will be allowed to use NutMan even if the authorization process fails. However, the plans so produced will display a note mentioning that the plan is not State Certified.

After the authorization process, NutMan begins and displays a window with a toolbar and menu bar, but little else.

Program Tools

Toolbar

The NutMan application window has a toolbar (Figure 3.7) with nine buttons on it.

NUTRIENT Windows Application
File Edit View Utilities Help
Click here to open an existing plan
Help button
Click here to create a new plan
Version Information

Figure 3.7 The NutMan Toolbar.

Most of the icons on these buttons are fairly representative of their functions, as in the case of other windows based programs. The first button can be used for opening a new plan file. You can open an existing plan file by clicking on the button with a folder icon. To save a plan file click on the button with a disk icon. You can print plan files by clicking on the button with the printer icon. The printing and saving options will be active only if a plan file is open. When you first launch the program these buttons will be grayed out. The three buttons in the middle of the toolbar are for editing purposes and are not implemented in this version of NutMan. Therefore,

these buttons are grayed out to indicate that they are not active. To get version information click on the question mark icon. The button with an arrow and a question mark is for help. Click this help button and your cursor changes shape into an arrow and question mark. Now open a NutMan menu or click anywhere in the NutMan window for a description of what you selected.

Menus

Many NutMan menus are not be visible until a new farm is saved or an existing farm is opened.

File Menu

New – creates a new farm file, Open – opens an existing farm file, Close – closes the opened farm file, Save – saves the opened farm file, Save As – saves the information to a new farm file, Print – prints the report window in the foreground, Print Preview – displays what the printed report window would look like (good for checking margins), Print Setup – specifies margins and other settings for printing, Exit – quits the NutMan application

Edit Menu

Preferences – opens the "NutMan Preferences" dialog

Farm Menu

Farm – opens the "Farm Information" dialog, Manure Production – opens the "Manure Groups" dialog, Biosolids – opens the "Biosolids Summary" dialog, Tracts/Fields – opens the "Field Information" dialog for the field selected

Nutrients Menu

Manure Allocation (by Field), Manure Allocation (by Season, Commercial Fertilizer – opens their respective dialog boxes

Browse Menu

Note Book – opens the Note Book for this Farm; Soil Tests, Lime, and Biosolids – opens the dialog box that displays the most recent application for each of these respectively

View Menu

Farm Summary, Field Summary, Job Sheet, Manure Schedule, Manure Summary, Productivity Report, Soil Test, and Application Summary – opens their respective report windows; Toolbar and Status Bar – controls what is displayed on the NutMan screen (both should have a check beside them)

Window Menu

New Window – opens a new window as a clone of an already opened window (not useful), Cascade and Tile – arranges NutMan windows so all are visible, Arrange Icons – not applicable, List of Open NutMan Windows – displays the name of all open NutMan windows, click on a name to bring it to the foreground

Help Menu

Index – opens an index of help topics for using NutMan, Using Help – opens instructions for using Help, About NUTRIENT... – opens a brief description of the NutMan application installed including version number

Narratives

NutMan includes a feature called "Narratives" to allow you to enter extra descriptive information into your farm plan. These narratives will be available from within the particular farm file they were entered in and will be included into some of the printed reports for that farm. You can add comments (narratives) for a farm, tract, field, or crop by clicking on the "Narrative" button in the respective dialog box. The "Narrative" dialog box (Figure 3.8) for that farm, tract, etc. will open. The dialog will have an area on the left side in which to type your comments. The right side of the dialog displays the global NutMan Narrative Glossary (described below). Comments from your narrative can be added to the Glossary and vice versa.

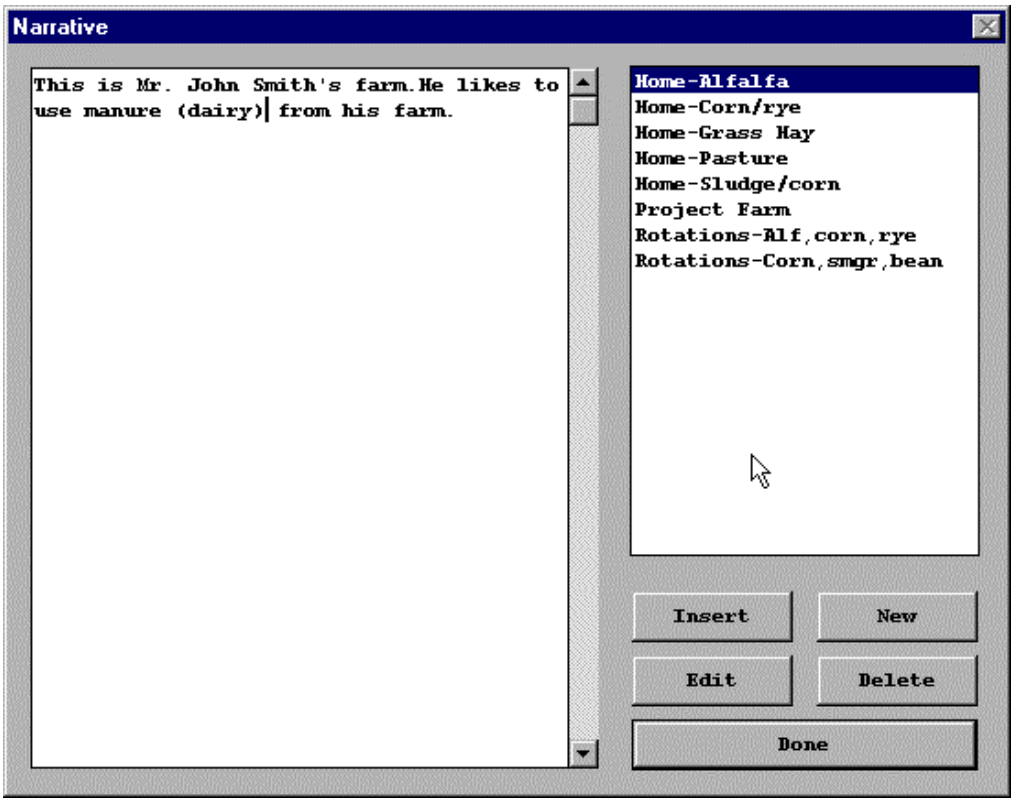

Figure 3.8 The Narrative Dialog Box.

Creating a Narrative

To create a Narrative, enter your comments about the farm, or tract, etc into the textbox on the left. To insert the text from a glossary item into your Narrative, select the appropriate glossary item and click the "Insert" button. Once you have completed your Narrative, click on the "Done" button.

Using the Narrative Glossary

The NutMan Narrative Glossary is a global glossary because the information is stored in the NutMan application itself and not just in a particular farm file. This means that narrative information entered into the glossary is available from any farm file opened on that particular computer. Use the glossary to store narrative information that you might need to enter in several narratives. Type it in once to the glossary and then insert it into other narratives.

To create a new glossary item click on the "New" button in the "Narrative" dialog. To create a new glossary item from an existing Narrative, you must have that Narrative open. This means that if the Narrative is about a particular tract, you must open the dialog box for that tract and click on the "Narrative" button. Highlight the text that you want to include, then click the "New" button. The highlighted text should have been copied to the glossary item. Give the item a title and then click "OK". To edit or delete a glossary item, select the item and click the appropriate button.

Notes

Notes are similar to Narratives but instead of describing a field, they are used for clarifying specific applications of manure, biosolids, or commercial fertilizer. Clicking on the “Note” button in these dialog boxes will open the "Note Book" dialog box (Figure 3.9). It shows all the Notes in the plan as well as all the Notes saved to the global Note Book. The ‘global’ Note Book consists of Notes stored in the NutMan application itself and not just in a particular farm file. This means that the information entered into those Notes is available from any farm file opened on that particular computer. Use the ‘global’ Note Book to store information that you might want to attach to nutrient applications in several farm files. Notes are displayed in the Job Sheet report as footnotes for particular nutrient applications.

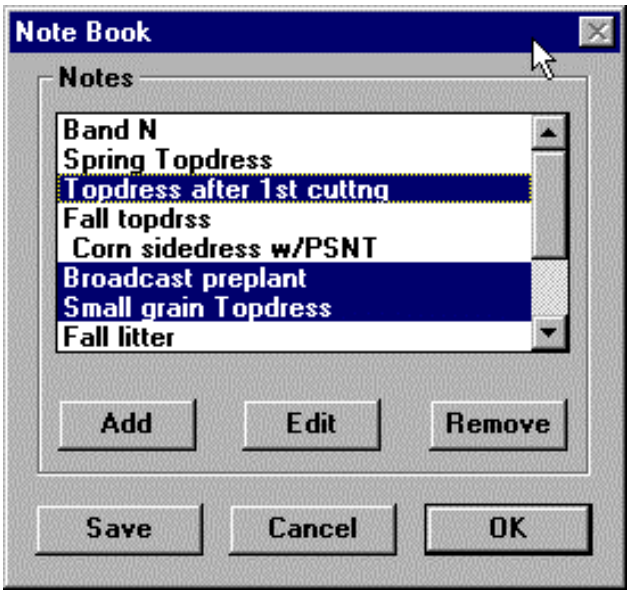

Figure 3.9 The Note Book Dialog Box.

Creating a Note

Notes can be associated to particular Manure, Biosolid or Commercial Fertilizer applications. From either of the Manure or Nutrient dialog boxes, select the application that you wish to create a note for. Click the “Note” button and the Note Book (Figure 3.xxx) should open. Click the “Add” button and a "Note" dialog box will appear for inputting a note. It provides spaces for entering a name for the Note and for the Note content. When you are finished creating the note click “OK”. To associate the newly created Note with the application, see below.

Reading, Editing, and Removing a Note

Open the Note Book either from one of the dialogs described above or by selecting “Note Book” from the “Browse” menu. To read or edit a Note, double-click on its title or click on the “Edit” button. Make edits as desired, then click ”OK” when finished. To remove a Note, select it by clicking once on its title then click the “Remove” button.

Associating a Note(s) to a Nutrient Application

If you have not already done so, from either of the Manure or Nutrient dialog boxes, select the application that you wish to create a Note for, then click the “Note” button. To associate a Note(s) to the nutrient application, select the Note by clicking once on its title. To associate more than one Note, click on their titles as well. To disassociate a Note, click on it again and it will be unselected. Once you have selected the Notes you wish to associate, click on the “OK” button.

Saving a Note to the ‘Global’ Note Book

To save a Note to the ‘global’ Note Book, select the Note from the list of Notes by clicking once on its title, then click the “Save” button. When you create, read, or edit a Note, you have the option of selecting the “Auto Save” checkbox. If you do so, the Note will be saved to the ‘global’ Note Book when you close the Note by clicking “OK”.

Setting NutMan Preferences

The first time you run NutMan you should enter some basic information into “Preferences” dialog. This creates some "default" settings for NutMan. Preferences are set by selecting the “Preferences” option under the “Edit” menu of the NutMan program window. This will bring up a dialog box (see Figure 3.10) prompting you for the name of the nutrient specialist, location, information about past manure applications, soil tests, certain farm plan features, and the duration of your intended plan.

The values entered here are used as defaults in NutMan, so it is worth taking the time now to save time later. You can change your defaults at anytime and by returning to the “Preferences” dialog. You can also customize most of these defaults for a particular field through its "Field Information" dialog box (Figure 4.3).

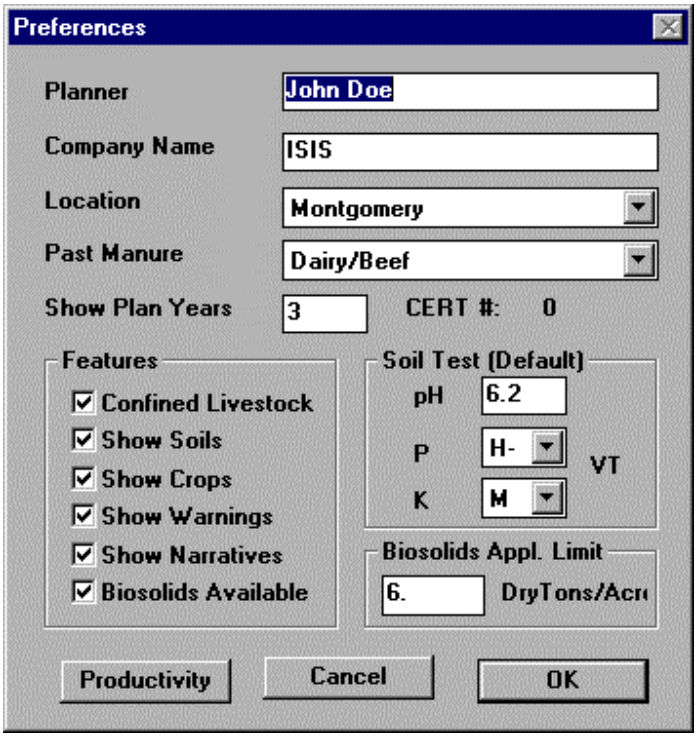

Figure 3.10 Preferences dialog box prompting you for default information on the specialists name, location, plan duration, soil test results, and manure options.

Nutrient Plan Features (checkboxes)

There are six check boxes on this Preferences dialog box each relating to a specific aspect of the nutrient management plan. These options affect the information displayed by NutMan in different places and allow you to customize the plan and the output to your requirements. Remember, any and all of these options can be overridden for a particular planning session.

Plan Features	*Description*
Confined Livestock	Program will prompt for manure production information as part of your plan (necessary if want to use manure for fertilizer).
Biosolids	Program will prompt for biosolids information.
Show Soils	Program will show soil information in the field summary report
Show Crops	Program will show crop rotation information by season in the field summary report
Show Warnings	Program will list soil related warnings in the field summary report
Show Narratives	Program will show narratives in summary reports.

Table 3.1 Nutrient Management Plan features available to select in "Preferences".

Soil Test (default)

Enter the results of a soil test that best represents your farm. This will be the default soil test for all fields. It can be customized at any time for any field and any season via the "Soil Test History" dialog box (Figure 4.5).

Biosolid Application (default)

Enter the "Virginia Nutrient Management Standards and Criteria" allowable biosolid amount (dry tons/acre) for your farm.

Tillage Options Dialog Box

The "Tillage Options" dialog box (Figure 3.11) is accessed from the NutMan "Preferences" dialog box through the "Productivity" button. This dialog is used to set the tillage options for the crops used in the Productivity Report.

Figure 3.11 Tillage Options Dialog Box. This dialog sets the tillage options for the crops used in the Productivity Report.

Managing Plan Files

Creating a New Plan

Each nutrient management plan, including all the farm, tract, field, livestock, manure and nutrient application information and associated narratives and notes, is stored as a separate file. There are numerous dialog boxes that allow you complete this information and store it collectively in one single file called a ‘Plan File’.

NutMan will guide you through the steps in creating a plan. This means that the "Farm Information" dialog box will open to begin. Once you close that box, NutMan will prompt you to save the plan. Once you give the plan a name and save it, the "Manure Groups" (production) dialog box (described in Chapter 5) will then appear. Closing this box will cause the "Biosolids Summary" dialog box (described in Chapter 6) to open. Finally, closing this opens up the "Job Sheet" window (described in Chapter 8) for this new plan. To start a new plan, go to the “File” menu in the NutMan application window and choose "New" or, click on the "New Document" button in the tool bar. Either way, a dialog box titled “Farm Info” will appear (Figure 3.12).

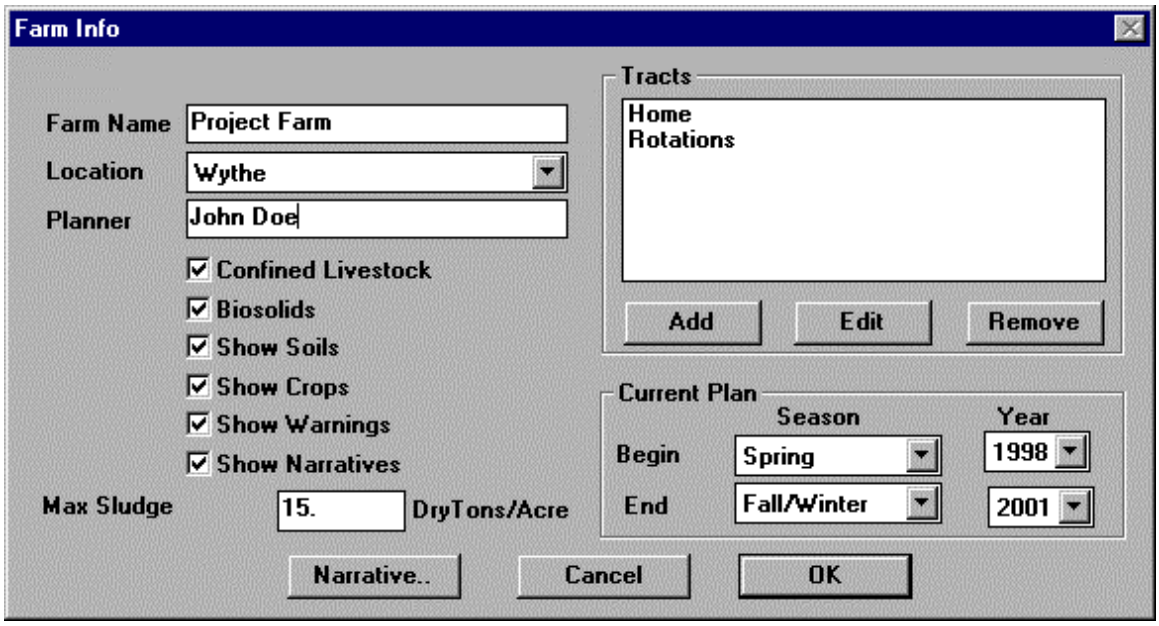

Figure 3.12. The Farm Information Dialog Box. A description of the farm including its tracts, fields, crops and livestock is provided through this dialog.

Use the "Farm Info" dialog to describe the farm and set plan dates. You should see many of the fields filled in with information you entered as NutMan Preferences (see "Setting NutMan Preferences" above). You may override those preferences for this farm by changing the information in this Farm Information dialog box (changing information here will not affect the preferences). Describing the farm consists of entering lists of tracts and fields, adding descriptive narratives, and entering information about manure production and biosolids. In the "Farm Information" window, be sure that the correct planner's name is entered. Type in the name of the farm and choose the county where it is located by clicking on the pull-down arrow to the right of the location box. The farm's county is used as a default for all farm tracts. For information about the function each of the checkboxes, see "Setting NutMan Preferences" and Table 3.1 above.

Typing the first letter of the county name will scroll to that portion of the list.

The "Farm Information" dialog includes the beginning and ending dates for your nutrient management plan. The plan duration is the default is set in NutMan Preferences. NutMan determines the beginning season (Spring or Fall/Winter) and

year based on your computer's internal clock. You can change these values in the "Farm Info" dialog if necessary (click on the pull-down list).

The "Tracts" box in the upper right hand corner of this "Farm Information" dialog shows a list of tracts on the farm. All farms must have at least one tract. Tracts are made up of fields, described later. To add tracts click on the "Add" button. This will take you to another dialog box called "Tract Information". Further information on adding tracts and fields to a farm can be found in the next chapter, "Describing a Farm".

Saving a Plan

Nutrient management plans are saved in files in order to be read later. NutMan automatically saves your plan file whenever you close all dialogs.

Once you have entered the farm information, click the OK button on the "Farm Information" dialog. NutMan then gives you a dialog box asking you to confirm the start and end dates of your plan (Figure 3.13).

Figure 3.13 Dialog box asking for the confirmation of starting and ending dates for your plan.

Click "OK" and then the program will ask you if you want to save changes to your plan. Click the "Yes" button and it will bring up a "File Save As" dialog box (Figure 3.14). All saved plans are given a ".nmp" file extension. You do not need to enter the file extension; it will be added automatically. Plans are saved in the NutMan directory by default, but you can change the destination directory and drive using this dialog. Type an appropriate name for your plan (eight or fewer characters), choose the location to save the plan file, and click on "OK". The plan will be saved to the file and location you named.

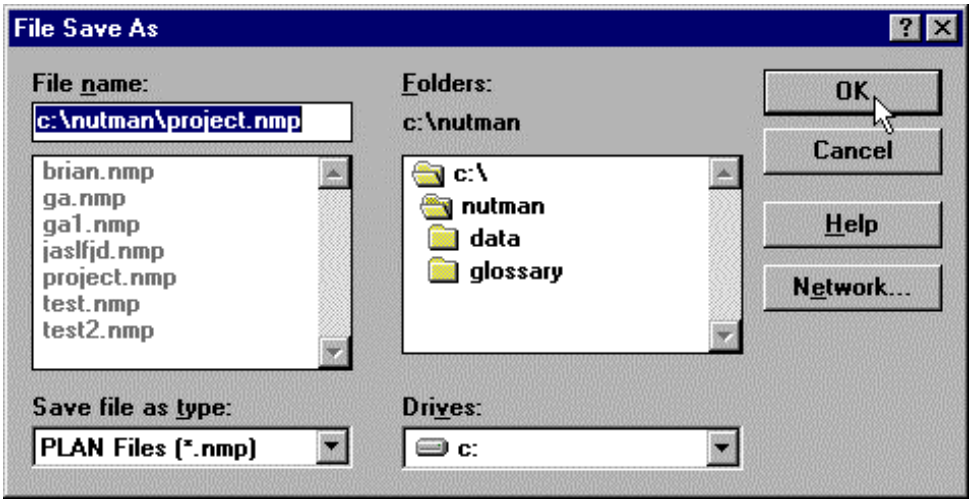

Figure 3.14 File Save As dialog box prompting you to name the plan file and save it in a directory of your choice.

Each file represents a farm and its plan. To create a new plan for a farm that already has a plan file saved, open the file and go to “Save As...” under the “File” menu in the NutMan program window. It will bring up the “File Save As” dialog box. Change the file name by typing in an alternate name for the plan and click “OK”. You can now add, delete or edit items from this plan according to your needs. The old file still exists, so you will have a copy of the original plan file before editing the information for the new plan. You should also periodically copy your plan files to a floppy disk, tape drive or other media, as a backup.

Opening an Existing Plan

From the "File" menu, choose "Open...". A "File Open" dialog box (Figure 3.15) will appear allowing you to browse all your plan files.

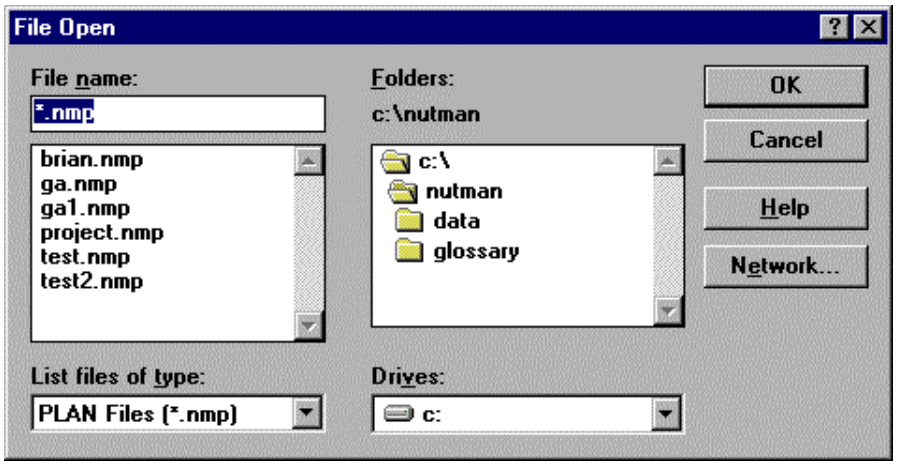

Figure 3.15 File Open Dialog Box. Choose the appropriate drive and the directory to open an existing plan file.

Change directories (or drives) based on where you saved your plan files. Choose the file name you want to open (all saved plan files are named with a ".nmp" extension), and press ENTER or click "OK". Your plan file will be opened and shown on the screen (depending on the size of the file and the speed of your machine this can take a minute or more). A nutrient balance sheet or “Job Sheet” will be displayed when you open an existing plan (see Chapter 8).

Quitting NutMan

To quit the program, first choose “Close” from the "File" menu to close the current plan file you are working with. Save changes if you want to. Once the plan is closed, the screen will remain mostly blank and look like the opening screen when you first launch NutMan. Now choose “Exit” from the "File" menu. This will quit NutMan and give you a “Thanks” box. Click on “OK” to get back into your Windows environment.

Chapter 4. Describing a Farm

Described in this chapter is how to add, edit, or delete information about a farm, tract, and/or field including crop rotations and yield, soil tests, and lime additions.

Editing Farm Information

To edit the information in an existing plan file, open that file in NutMan. The Job Sheet Window should now be displayed. You can edit the farm in several ways. From the "Farm" menu there are shortcuts to all of the dialog boxes that describe the farm, its tracts, and their fields. We will start with "Farm Info" dialog box (described briefly in Chapter 3).

Choose "Farm" under the Farm menu and the "Farm Info" dialog box will appear. The Tracts list box on the right top of the "Farm Info" dialog lists all the tracts on the farm. You can add, edit or delete tracts in a farm from here.

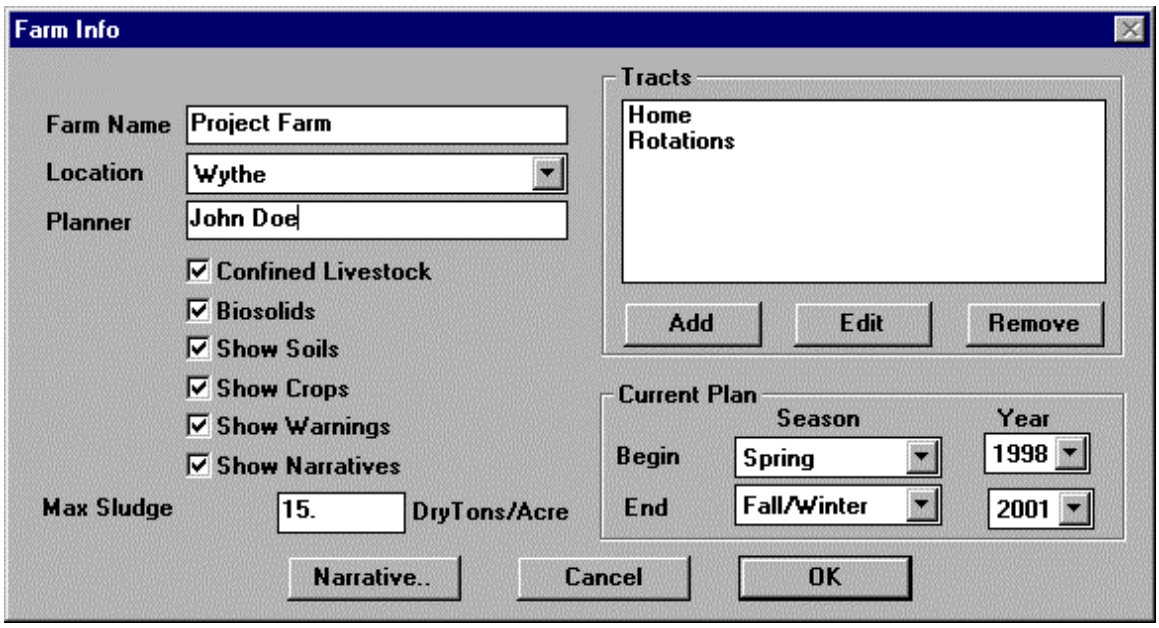

Figure 4.1. The Farm Information Dialog Box.

You can create a new tract by clicking on the “Add” button. NutMan will then display a “Tract Information” dialog box (Figure 4.2) which you use to add fields to the tract. To edit an existing tract, highlight that tract name from the list by clicking on it, then click the "Edit" button beneath the Tracts box. To remove a particular tract, highlight the name of that and click on the "Remove" button. Removing a tract also deletes all the fields associated with that tract.

Double-clicking on an item in a list will usually open that item for editing.

Complete the Farm Information (Farm and Planner name, County, and plan dates) according to the instructions provided in the previous chapter on creating a new plan, but do not close the window.

Be sure to check the confined livestock box if you intend to apply manure to the farm.

Narratives (Farm, Tract, and Field)

You may click on the “Narrative” button in the "Farm", "Tract", and "Field" dialog boxes to enter text that describes it. This feature is described in detail in Chapter 3 (Using NutMan) under the “Tools” section.

Editing Tract Information

To edit tract information, open the "Tract Information" dialog box by either selecting the tract from the "Farm Information" dialog box or choosing the tract from the "Farm" menu on the Menu Bar. The "Tract Information" dialog box (Figure 4.2) is similar to the "Farm Info" dialog box. Here you name the tract, record its CFSA tract number, state its location, enter a descriptive narrative, and create the tract’s list of fields. Each tract has a location that by default is the same as the farm’s location. You can change the tract location if it is in a different county.

A tract may include one or more fields. The "Fields" list box shows all the fields in the tract. You can create a new field by clicking the "Add" button. You can edit or remove an existing field by first selecting the field and then clicking on the “Edit” or “Remove” buttons.

Clicking the "Add" or "Edit" buttons will display the "Field Information" dialog box (Figure 4.3) which will be explained in the next section.

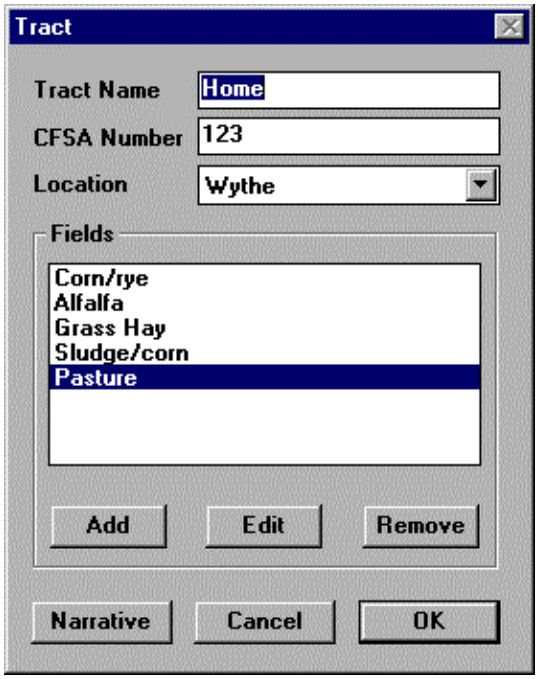

Figure 4.2 Tract Information Dialog Box.

All tracts for a particular farm must have unique names or the system will not recognize the second tract correctly. Tracts of different farms can have the same name.

A tract must have at least one field, and although there is no limit to the number you can add, the system will only display the first 50 fields per tract in the "Farm" menu on the Menu Bar.

After entering the tract description and fields, press ENTER or click on the "OK" button to accept the input. Clicking on the "Cancel" button will cancel all changes made since the last save. Clicking on the "Narrative" button will allow you to enter your comments for the tract.

Editing Field Information

To edit field information, open the "Field Information" dialog box by either selecting the field from the "Tract Information" dialog box or choosing the tract/field from the "Farm"

menu on the Menu Bar. Open the “Field Information” dialog for the field you want to edit. This “Field Information” dialog box has several parts.

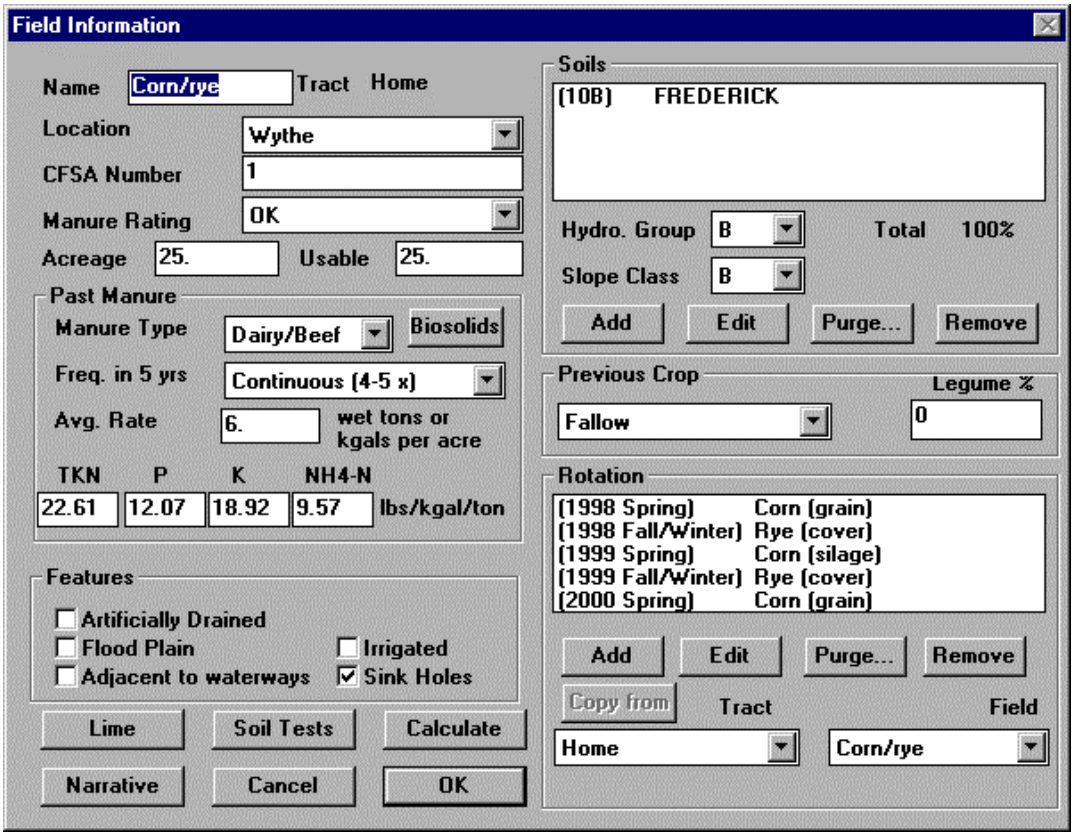

Figure 4.3 Field Information Dialog Box. You can use the “TAB” key or the mouse to edit individual entries in this dialog.

Field Description

General Description

In the upper left, you must enter or verify descriptive information for this field including:

• Name: Enter a unique name for the field. It can be text or a number or a combination of both. e.g., “corn-2”; “sawmill” or “21”.

Field names need only be unique within a tract, so you could have two fields named “Corn” as long as they are in different tracts; however, we recommend you avoid any duplication.

• Location: The county shown here is the Tract's county, but you may change it if need be.

Changing a field's location will eliminate its soil information and invalidate all yield and nutrient recommendations, if they have already been entered.

• CFSA Number: The number used by CFSA to refer to the field.

• Manure Rating: This field has three options. Either "OK", "Possible", or "Never". Choose one of these options using the pull-down list. This rating will be used in future versions of NutMan to help suggest manure allocation schemes. It indicates the farmer's preference about whether you should consider applying manure to that particular field.

• Acreage and Usable Acreage: Enter either or both values here. Usable acres are used in calculations and must be less than or equal to "Acreage", i.e., the measured acreage. Reduce usable acreage to account for buffers, field borders, rock outcrops, or other factors that limit the area over which you apply fertilizers or manure.

Past Manure Applications

The "Past Manure" box (middle left) describes this field's history of manure applications before the beginning date of the plan. It is used to calculate residual nitrogen levels during subsequent years. This box also has a "Biosolids" button. When you click this button, NutMan will open the "Biosolids History" dialog box explained in Chapter 6.

Past Manure Application descriptors include:

• Manure Type: You must choose one from the pull-down list. Choices are: Poultry, Dairy/Beef, or Swine manure.

• Frequency: Select an application frequency of Rare, Frequent, or Continuous, representing the number of years: 0 to 1, 2 to 3, or 4 to 5 respectively for the last five years that manure was applied to this field.

Note that setting the frequency to "Rare" or the Average Rate to "Zero" results in no residual Nitrogen credit from past manure applications.

• Average Rate: Enter the average amount of manure applied per application in the past, in either tons or thousands of gallons per acre.

• Manure Nutrient Analysis Values: Default nutrient values (TKN, P, K and NH4-N) for the chosen manure type are shown in lbs/kgal/ton. You may edit these values, and they will be saved with the plan for this field only.

Field Features

The “Features” box (lower middle left) lets you record some field features that affect management considerations and/or yield on your field. Check all the boxes that apply to your field conditions.

Soils

In the upper right of the “Field Information” dialog is the “Soils” section. A field may contain one or more soil types. Each soil type added includes the percent of the field it comprises. Here you use the "Add", "Edit", "Purge", and "Remove" buttons to select the soil(s) for this field. Clicking “Add” or “Edit” bring up the “Soil Information” dialog box (Figure 4.4).

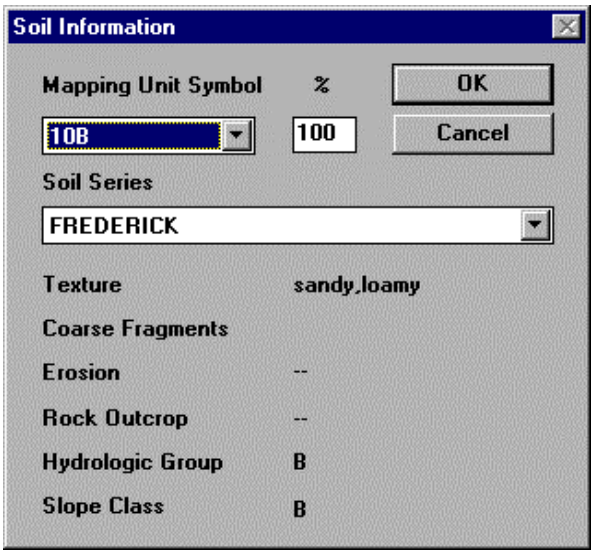

Figure 4.4 Soil Information Dialog Box. You can select a soil type for your field either by the name and/or the mapping unit symbol.

As each soil is added, the system will update the field’s hydrologic group and slope class automatically, but you can override these values manually if

necessary. If you override the hydrologic group and slope class values, NutMan puts a star next to the value to indicate that and it also inserts a comment in the "Field Summary" report. As with other list dialogs, click once on “Add” to add a soil type, click on a soil type (in the list area) and click on “Edit” or “Remove” to change or delete the soil, or click once on “Purge” to eliminate all soils.

You can choose a soil by map unit symbol (from the soil survey for the field’s county) or by soil series name. If you use the name, be sure that the slope class (letter code at the end of the map unit symbol) is correct. Enter a percent of the field for the soil and click “OK”. The program enters the remaining percentage for you as a default. The soil type has a direct bearing on the productivity of the field. Changing the soil type would change the crop yield and crop nutrient needs.

If you change field soil types after you have entered crops for that field, you must edit each crop and click the "Calculate" button in the "Planting Season" dialog box to force NutMan to recalculate the crop yield and nutrient needs for that season. Do this for each crop/season.

Previous Crop

In the middle right of the “Field Information” dialog (below the "Soils" list) is a box with previous crop information. The default is “Fallow”. It is a clickable box where you can have a drop down list of various crops from which you can choose the crop last grown on the field. Enter or verify the percentage of legume if the previous crop included legumes.

Crop Rotation Sequence

Towards the bottom right of the “Field Information” dialog is a box with crop rotation information in it. If you started a new plan, this box will be empty until you specify the planned rotation for your field. A rotation is represented as a series of crops. Each crop added includes the season and the year in which it will be grown. You can use the "Add", "Edit", "Purge", and "Remove" buttons to describe the planned rotation for this field. As with other list dialogs, click once on “Add” to add a crop, click on a crop in the list area and click on “Edit” or “Remove” to change or delete the crop from

the rotation, or click once on “Purge” to eliminate all crops. “Add” and “Edit” bring up the "Planting Season” dialog box described below (see Figure 4.7).

• Copying Rotations from other fields: If you have more than one field/tract, there is an option in the “Field Information” dialog box to copy a complete rotation from one field into another. It is more than likely that farmer’s choose to grow the same rotation in several of their fields in a given tract. To avoid duplicate data entry, you can click on the “Copy From” button and select the field (and tract) you want to copy rotation data from. That data will be automatically added to your current field. This will only copy the crop rotation sequence including non-predefined crops. It will include just the default crop yield, crop nutrient need, and lime application values for the predefined crops from NutMan's database. It will not copy over customized crop yields, crop nutrient needs, lime applications, or soil tests.

Soil Tests

Clicking the "Soil Test" button on either the "Field Information" or the "Planting Season" dialog boxes will open the "Soil Test History dialog box (Figure 4.5).

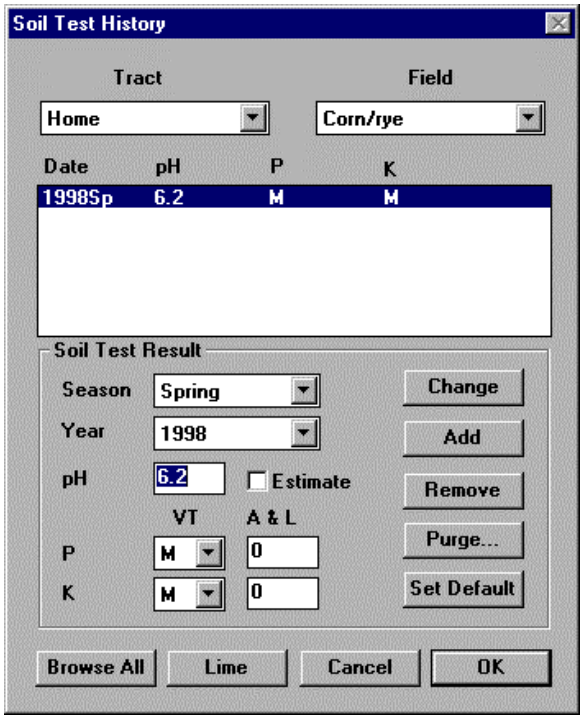

Figure 4.5 Soil Test History Dialog Box.

This dialog box has the name of the tract and field at the top and has a box to store results from your soil tests. Fields and their crops use the default soil test values set in the NutMan preferences if no other soil test information is specified. You may enter specific soil tests for your fields through the "Soil Test History" dialog box. Soil tests are entered by season and year and consist of pH, phosphorus (P) and potassium (K) values. P and K can be defined by the standard of either of the testing labs, VT or A & L. The A & L standard will be automatically converted to the VT standard. Once a soil test has been entered for a field, it becomes the default for all crops for that field that were planted in that season or later. If a more recent test is added then it becomes the default for all crops planted in that season or later.

To add a new soil test, make sure that the correct tract and field are selected at the top of the dialog box. Then, fill in the season and year and the soil test results. Check if it was an estimate and not an actual test. Finally, click the "Add" button. The test should now appear in the list of tests. To change (edit) an existing soil test, click on the test in the list of tests. The Soil Test Results area should now contain values for the test you wish to change. Make your changes there and then click the "Change" button. The soil test list should now contain the amended values for that test. To remove (delete) a soil test, click on the test in the list of tests, and then click the "Remove" button. Clicking the "Purge" button will remove all of the soil tests for that field.

If you think that one of your soil tests is more representative for your farm in general than the default soil test values entered in the NutMan preferences, then you can use it to replace those default soil test values. Choose (highlight by clicking) the soil test that you want to use as your new default soil test, then click the "Set Default" button.

Caution! Clicking the "Set Default" button means that you will replace the soil test values for every crop (in every tract and field) that uses the default soil test values.

Whenever you close the "Soil History" dialog box after adding, changing, or deleting a soil test, NutMan will ask you if you want the crop yields and nutrient requirements recalculated. If you choose “Yes” (recommended), then the N, P and K values in the “Crop Nutrient Needs” section of the “Planting Season” dialog will be

updated for all of the crops affected by the change (i.e. the season of the test and all seasons afterward). The same for the crop yields.

Clicking the "Browse All" button opens the "Soil Test Information" dialog box (Figure 4.6). This box displays the most recent soil tests for all the fields in a particular tract.

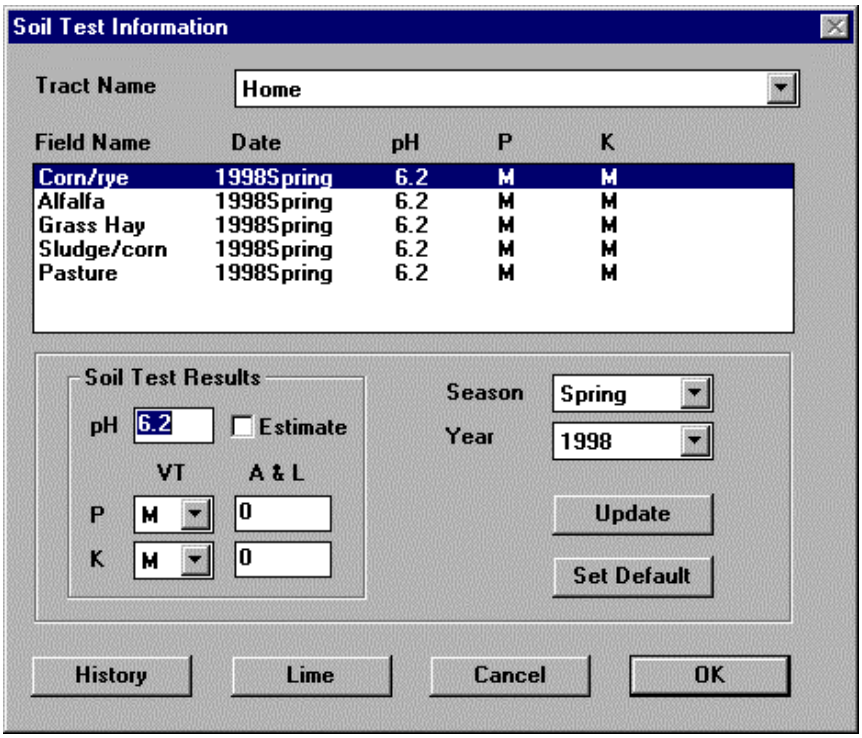

Figure 4.6 Soil Test Information Dialog Box. This box displays the most recent soil tests for all the fields in a particular tract.

You can view this information for all the tracts in your farm by simply changing the tract name. You can also access the "Soil Test Information" dialog box from the "Browse" menu on the Menu Bar. From this box you can enter a new soil test for a field. Be sure the correct tract and field are selected, enter the season and year and soil test results, check if the test was an estimate, then click the "Update" button.

Clicking the "Cancel" button will not negate entering a soil test with the "Update" button.

To 'undo' a mistake, you must click the "History" button to open the "Soil Test History" dialog box, select the soil test from the list and either "Change" or "Remove" it per instructions above.

Lime Applications

Clicking the "Lime" button on either the "Field Information" or the "Planting Season" dialog boxes will open the "Lime History" dialog box (Figure 4.7) for that field. The "Lime History" dialog contains information about the date and amount of all lime applications for the field selected.

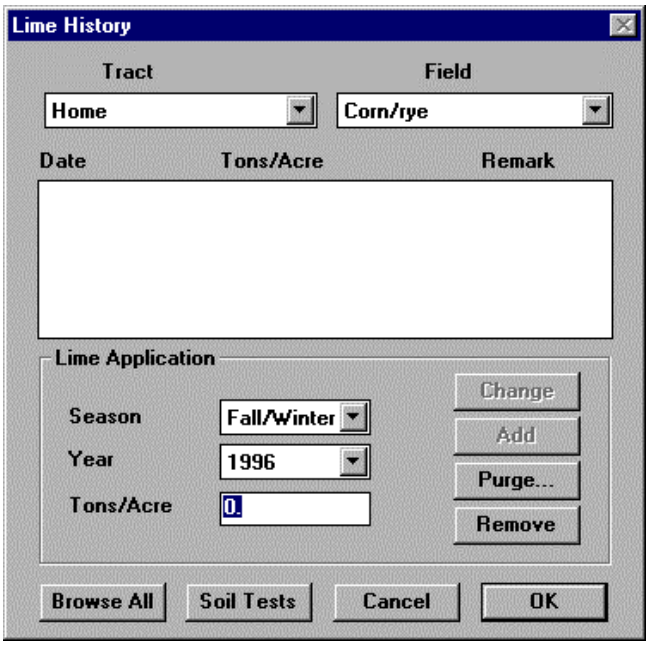

Figure 4.7 The Lime History Dialog Box. You can enter lime applications in individual fields by season in this box.

To add a new lime application, make sure that the correct tract and field are selected at the top of the dialog box. Then, fill in the season and year and the application amount. Now click somewhere in the list of applications. Finally, click the "Add" button. The application should now appear in the list of applications. To change (edit) an existing lime application, click on the application in the list of applications. The "Lime Application" area should now contain values for the application you wish to change. Make your changes there and then click the "Change" button. (You may have to click in the list of applications again first). The lime application list should now contain the amended values for that application. To remove (delete) an application, click on the application from the list, and then click the "Remove" button. Clicking the "Purge" button will remove all of the lime applications for that field.

Take note when adding new lime applications that the default year is NOT the current year.

Clicking the "Browse All" button opens the "Most Recent Lime Applications" dialog box (Figure 4.8). This box displays the most recent lime applications for all the fields in a particular tract. You can view this information for all the tracts in your farm by simply changing the tract name. You can also access the "Most Recent Lime Applications" dialog box from the "Browse" menu on the Menu Bar. From this box you can enter a new lime application for a field. Be sure the correct tract and field are selected, then enter the season, year, and application amount. Finally, click the "Set" button.

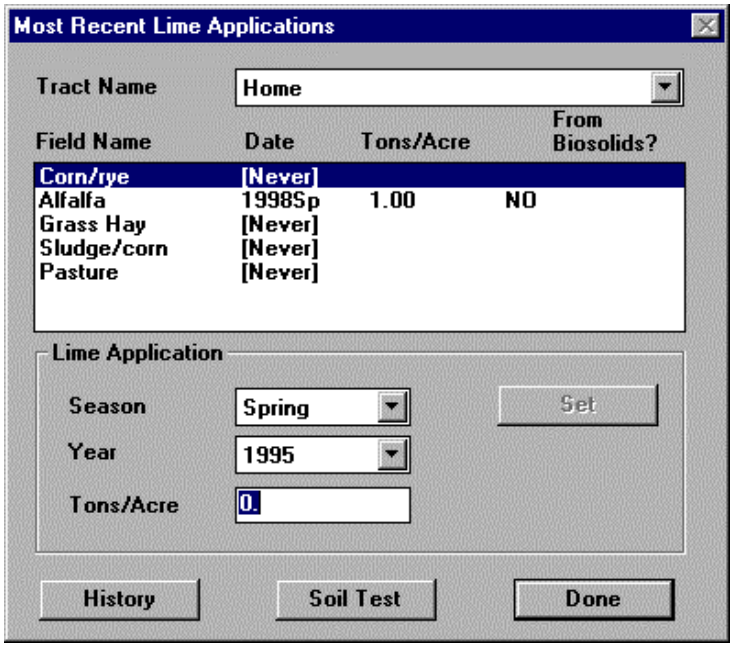

Figure 4.8 Most Recent Lime Applications Dialog Box. This box displays the most recent lime applications for all the fields in a particular tract.

Planting Season Dialog Box

Adding or editing crops in the crop rotation section of the “Field Information” dialog box brings up the “Planting Season” dialog box (Figure 4.9). From this dialog box you select a crop to add to the planned rotation for that field. Selecting one of the predefined crops, makes use of NutMan's database values for harvest date, tillage, yield units, and percent legumes. NutMan can also automatically calculate for you

(when you click the "Calculate" button) the proper lime application, crop yield, and crop nutrient needs based on field features, soil type, and soil test results. If you choose to enter a crop that is not on the predefined list, then you will have to enter all of these values yourself and the "Calculate" button is grayed-out.

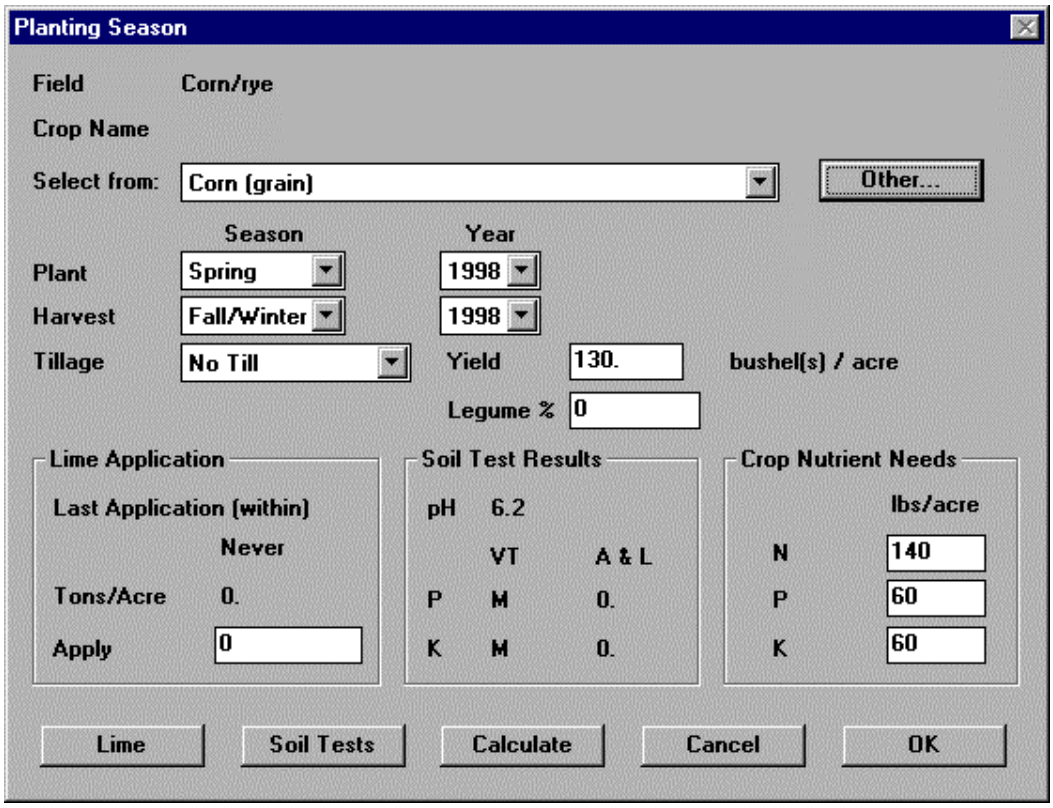

Figure 4.9 The Planting Season Dialog. You can use either the "TAB" key or the mouse to move from one entry to the next.

Selecting a Crop

To select a crop either choose a predefined crop from the pull-down list or click the "Other..." button. The crops available in the predefined list are variable and depend on the planting season. If you click "Other...", NutMan will display a dialog prompting you for the name and the yield units (i.e. tons, bushels, lbs.; NutMan enters the "/acre" for you) for that crop. Enter the appropriate information and click on "OK". The crop name will now be displayed in the "Planting Season" dialog box. For predefined crops, the crop name is displayed via the pull-down list.

- Multi-year crops: Multi-year crops like Alfalfa are listed with two options: (1) Establishment (estb.) and (2) Maintenance (maint.). The default

duration for an establishment crop is five years and for a maintenance crop is one year. You can change these values to reflect your rotation conditions more accurately.

- Double-Crop Soybean: If your rotation involves a soybeans double-cropped with Wheat (or Barley), simply select either Wheat/Soy.D.C (or Barley/Soy.D.C) from the list. You need not enter these two crops as separate entities. The system will automatically add these two crops to your rotation.

Planting and Harvesting Dates

If the crop you have selected is the first crop in the planned rotation for the field, the planting season of the crop defaults to the first season of the current plan; if it is not the first crop, the planting season defaults to the harvest season of the previous crop. The harvest season is automatically calculated (for crops selected from the predefined list) according to the number of seasons for that crop. You can change these data manually. If you enter a crop that is not predefined, then you must select the proper harvest season yourself.

Tillage

Select one of “Conventional”, “Minimum”, or “No-Till” to describe the tillage practices for the selected crop. This is done automatically for predefined crops.

Crop Yield

Crop yield is influenced by soil type, field features, and soil test results. Crop yields (and units) for predefined crops are stored in NutMan's database. NutMan will calculate the yield for predefined crops when you click the "Calculate" button. You can manually change the calculated crop yield to customize the plan for your specific field. If the crop yield is modified manually, a little star will appear on the right side of the yield box indicating that it has been modified. This change will also be indicated in the "Field Summary" report. After you have changed the crop yield manually, you should click the "Calculate" button and NutMan will recalculate the crop nutrient need for the different yield. You may not see any change in nutrient

needs depending on the crop, the soil test results, and the degree of change in the crop yield. However, clicking the "Calculate" button again removes the little star from beside the yield box.

Crop Nutrient Needs

Crop nutrient needs (N, P, K) is the nutrient deficit determined by the nutrient requirements for that crop and soil test results for that field. If the soil test results show a nutrient level above the nutrient requirements of the chosen crop, then there is no nutrient deficit and no nutrient need. Crop nutrient requirements for predefined crops are stored in NutMan's database. NutMan will calculate the nutrient needs for predefined crops when you click the "Calculate" button. You can manually change the calculated crop nutrient needs to customize the plan for your specific field. See the Calculation section below for instructions on preventing customized crop nutrient needs from being overridden.

Soil Test Results

Soil test results shown in the "Planting Season" dialog are based either on the most recent soil test for that field, the defaults set in NutMan Preferences, or the defaults set with the "Soil Test History" dialog box's "Set Default" button. Soil test results that are based on one of the defaults are signified by "*Default". You may enter a recent soil test by clicking the "Soil Tests" button and adding a test in the "Soil Test History" dialog box. Once you are done adding a soil test, click on “OK” to go back to the “Planting Season” dialog. Whenever you change the soil test results, the program will prompt you if you need the crop yield and nutrient needs (and recommended lime application) recalculated. If you choose “Yes” (recommended) then the crop yield, crop nutrient needs, and recommended lime application will be updated.

Lime

The lime application section of the "Planting Season" dialog box displays the most recent lime application date and amount. NutMan will recommend a lime application amount based on the soil test results, if necessary, when you click the "Calculate" button. (NutMan can not recommend lime applications for seasons with non-predefined crops because it does not know

the ideal soil pH for that crop.) This recommended lime application will be entered into the "Lime History" dialog box when you click "OK". If you do not want to use the recommended lime application, then change it to a different one (must be a positive integer) or enter a "0" for no application. You may also click on the "Lime" button to edit the lime application history for that field. See the Calculation section below for instructions on preventing customized lime applications from being overridden.

Calculations

Calculations of crop nutrient needs and recommended lime applications for predefined crops are performed each time you click the “Calculate” button. If you manually modified any of those values then click the "Calculate" button, your changes will be lost. To prevent such a loss from happening, follow this procedure:

1. Chose a crop from the predefined list or define a new one.
2. Click the "Calculate" button.
3. Review the calculated value for crop yield and modify it as necessary for your field.
4. Click the "Calculate" button again.
5. Review the calculated values for crop nutrient needs and modify them as necessary for your field.
6. Review the recommended lime application and modify it as necessary for your field.
7. Click the "OK" button to go back to the “Field Information” dialog. From here you can add/edit more crops to adequately represent your crop rotation.

As a shortcut, if you select a predefined crop and click “OK”, all crop yield, crop nutrient needs, and recommended lime application calculations will be done automatically. However, you will not get to see or modify them unless you go back and edit that season.

Chapter 5. Manure Production

If you are creating a new plan and you are done describing your Farms (entering tracts and fields, soil tests, etc.), NutMan will check to see if you indicated that you have confined livestock. If so, NutMan will automatically open the "Manure Groups" dialog box (Figure 5.1) where you can begin to enter manure production information. If you are editing an already saved plan, then you should choose "Manure Production" under the Farm menu to get to the "Manure Groups" dialog box.

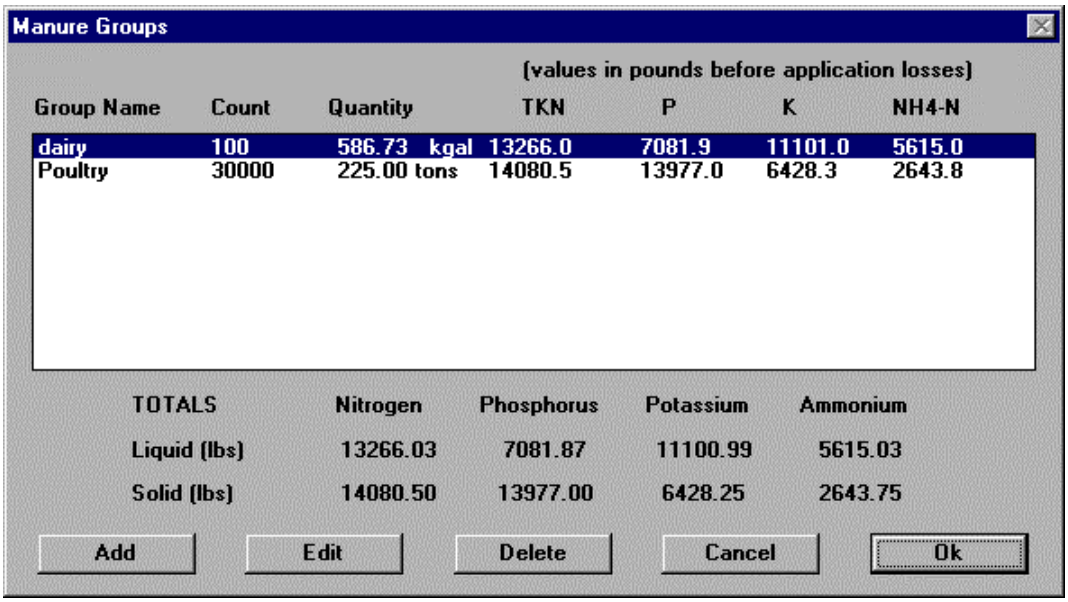

Figure 5.1 Manure Groups Dialog Box. You can add/edit/delete manure groups on your farm using this dialog box.

The "Manure Groups" dialog box shows a list of animal groups on the farm. Each animal group has a group name, count (number of animals), quantity or total annual manure production in tons (solid manure) or kgals (liquid manure), and manure nutrient analysis. The total amount of nutrients contained in the liquid and solid manure is also shown in this dialog box. This total amount is broken down into nitrogen, phosphorus, potassium, and ammonium amounts (lbs). In this dialog, you can add, edit or remove the animal groups on

your farm. These tasks will be explained in the following sections. Applications of manure are planned with the "Manure Allocation" dialogs (see Chapter 7).

Adding an animal group

If you click on the "Add" button from the "Manure Groups" dialog box, a "Manure Types" dialog (Figure 5.2) will appear allowing you to add particular types of manure. These refer to the basic types of animal groups (dairy, swine, etc.) and the kinds of manure produced on your farm (liquid slurry, semi-solid, etc.).

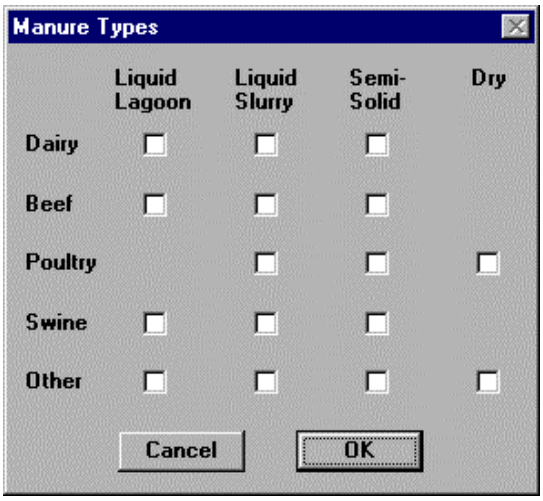

Figure 5.2 The Manure Types Dialog Box. You should indicate the types of manure you expect to be produced on your farm.

Multiple boxes can be checked, if you need to add several types of manure. After you finish selecting manure types, click on the "OK" button or press ENTER.

An "Animal Groups" dialog box (Figure 5.3) will appear for each manure type selected (after you finish one, NutMan will open the next one). Only one animal type may be selected in the "Animal Groups" dialog box. If you need to add more than one type, you may add other groups with the "Add" button in the "Manure Groups" dialog box (Figure 5.1).

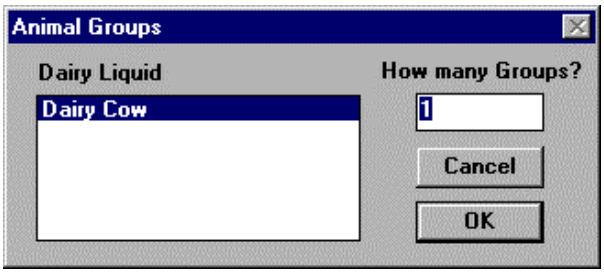

Figure 5.3 The Animal Groups Dialog Box. For each type of manure you select, the program prompts you to indicate the number of animal groups in that category.

For each animal type enter the number of animal groups (an animal group is typically a herd or flock). A common error is to enter the number of animals rather than the number of animal groups. This number will generally be less than five. If you input a number larger than five, a warning message box will appear to confirm your action. Choose "No" to cancel your input, or "Yes" to continue. You can discontinue your input of "Animal Groups" by clicking the "Cancel" button. A "Manure Production" dialog box (Figure 5.4) will appear if you click the "OK" button in the "Animal Groups" dialog.

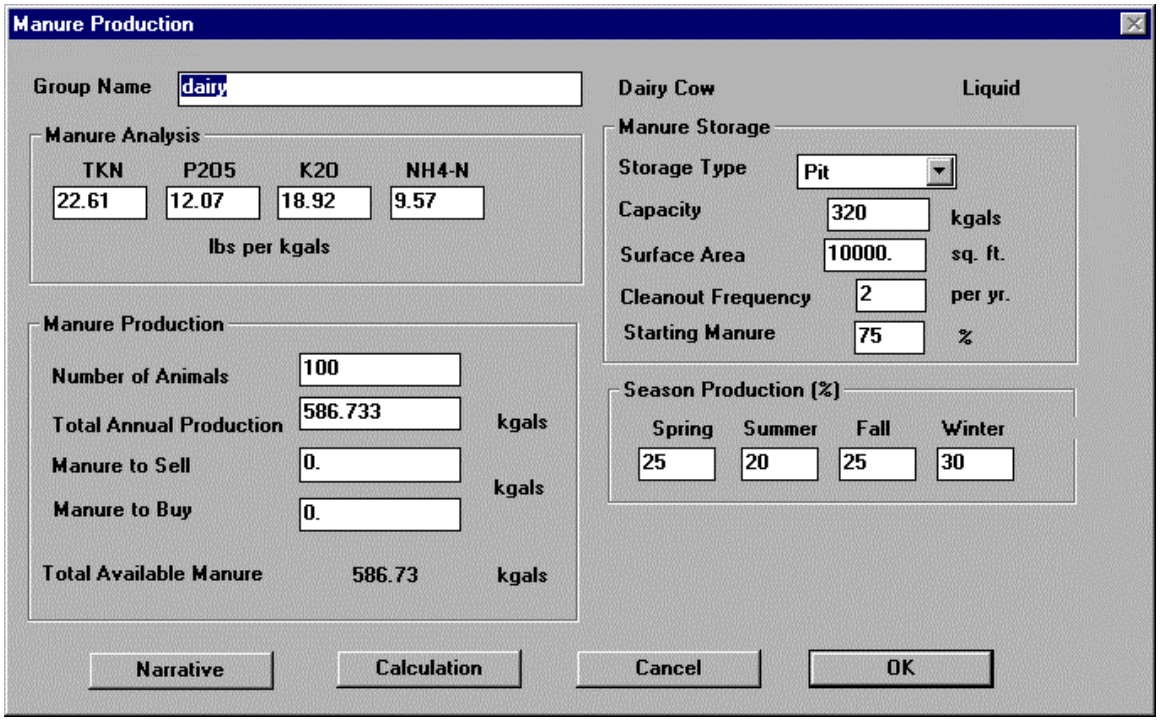

Figure 5.4 The Manure Production Dialog Box.

The Manure Production Dialog Box

You can enter information regarding manure production and handling for a particular animal group and manure type using the "Manure Production" dialog box (Figure 5.4).The top right corner of the dialog box indicates the animal type and the manure type as indicated in the “Animal Groups” dialog box (Figure 5.3). Give a descriptive name to the animal group in the top left corner.

Manure Nutrient Analysis

The middle left portion has manure nutrient analysis information in it. The manure analysis is default data based on the manure type. NutMan does not contain default values for several types including: dairy cow liquid lagoon, beef cow liquid lagoon and slurry, and swine semi-solid. You may change the analysis as necessary.

Manure Production

The "Manure Production" box includes the number of animals in your group, total annual production of manure in kgals, and the amount of manure available for sale. NutMan enters a default number of animals for you. Modify this number to reflect your animal group, then click in the Total Annual Production box to have NutMan recalculate the total annual manure production for you. You can see or modify the how NutMan determines the manure production amount by clicking on the “Calculation” button. A calculation dialog box will appear to allow you to change individual parameters and to recalculate the total annual production. There is a calculation dialog box for each manure type because each formula is unique (Figure 5.5).

Also in the Manure Production box are places to enter how much of this type of manure to sell and buy annually. The total available amount of manure is the total annual manure production minus the amount sold, plus the amount purchased. The seasonally available amount is the total available amount times the percentage determined by the season production percentage.

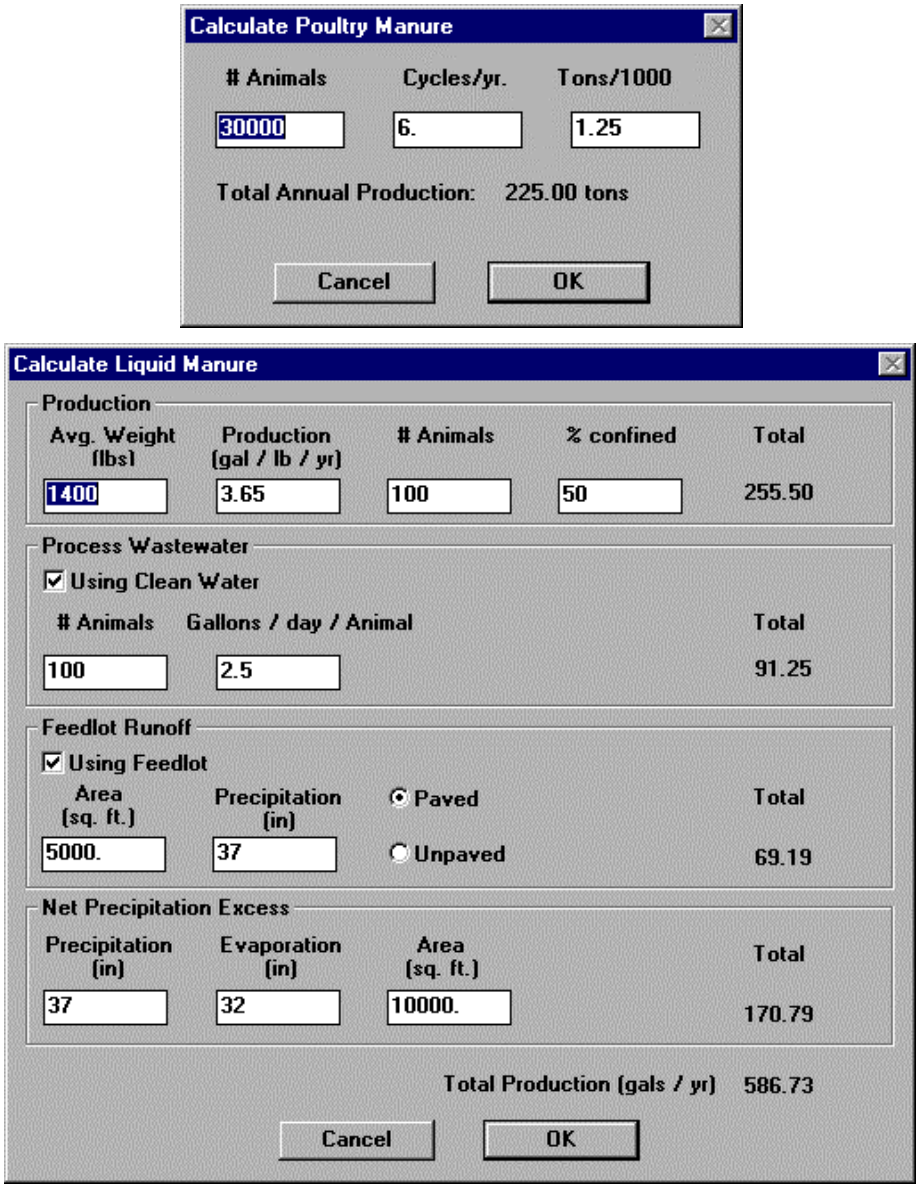

Figure 5.5 Manure calculation dialog for poultry (above) and liquid manure (below).

Manure Storage

Toward the middle left of the “Manure Production” dialog box is the Manure Storage section. Here you indicate the type of storage you have by selecting from a list of available options, give the capacity of storage and other descriptions of the storage facility.

Season Production

The bottom right of this “Manure Production” dialog has a “Season Production” section. This splits up the total annual manure production for an animal group into seasonal percentages.

Editing an animal group

Editing an animal group is similar to adding a group. Go to the “Manure Production” option under the “Farm” menu. It will bring you the “Manure Groups” dialog box. Double-click on the animal group you want to edit and NutMan will open the “Manure Production” dialog box. This box will show all the information and data already entered for the selected animal group. You can modify these data and click “OK” after all the changes are made.

Removing an animal group

Removing an animal group is straight forward. Just select the group you want to remove, and click the "Delete" button. This will remove the animal group from the “Manure Groups” dialog box.

Chapter 6. Biosolids

If you are creating a new plan and are done entering in your manure production information, NutMan will check to see if you indicated that you wish to use biosolids and if so will automatically open the "Biosolids Summary" dialog box (Figure 6.1) where you can begin to enter biosolid information. If you are editing an already saved plan, then you should choose "Biosolids" under the "Farm" to get to the "Biosolids Summary" dialog box.

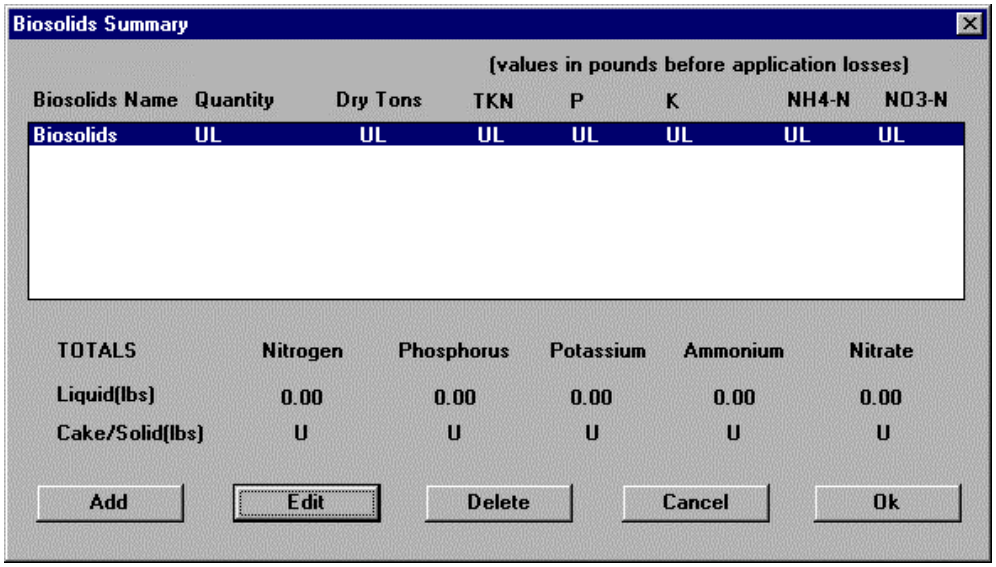

Figure 6.1 The Biosolids Summary Dialog Box.

The "Biosolids Summary" dialog box is used to keep track of the biosolids available for application on your farm. Each group has a name, application type, digestion type, available amount of biosolid in tons, analysis of the biosolid (in mg/Kg) and the $CaCO_3$ equivalent of the biosolid. The analysis is categorized into nitrogen (TKN), phosphorus (P), potassium (K), ammonical nitrogen (NH_4), and nitrate nitrogen (NO_3). In this dialog, you can add, edit or remove biosolid groups on your farm. These tasks will be explained in the following sections. The "Biosolids Summary" dialog also computes a sum total of the nutrient contents. The values listed are in pounds before application losses. If you selected an unlimited supply, however, then NutMan inserts the symbol "UL" for unlimited into these

tables to signify that there is no limit to the nutrients available. Applications of biosolids are planned with the "Manure Allocation" dialogs (see Chapter 7).

Adding a Biosolid Group

If you click on the "Add" button of the "Biosolids Summary" dialog box, a "New Biosolids Group" dialog box (Figure 6.2) will appear allowing you to add a new biosolid group.

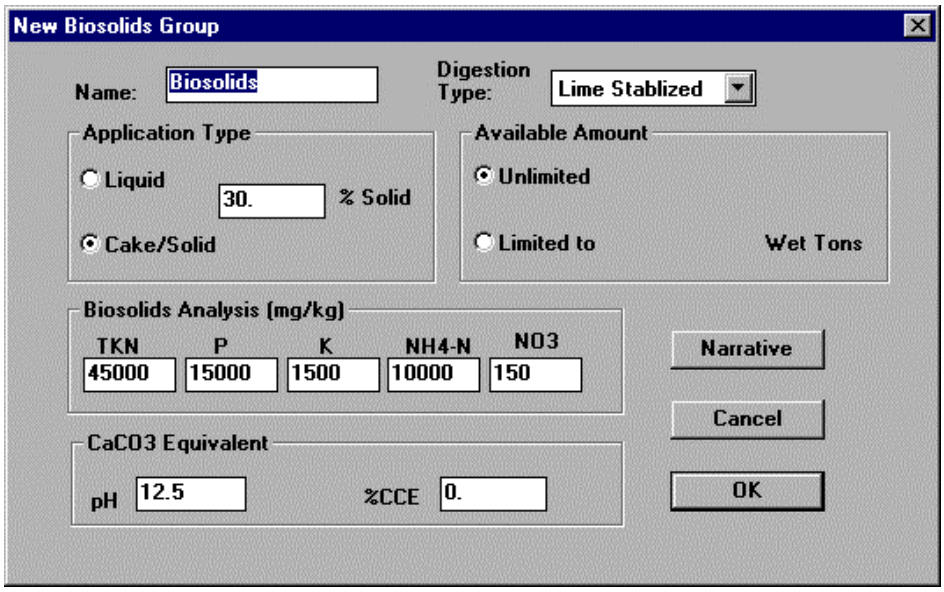

Figure 6.2 The New Biosolids Group Dialog Box. You can add a new biosolids group or edit an existing one using this dialog.

• Name: This field appears in the top left corner of the “New Biosolids Group” dialog. Enter a descriptive name to the biosolid group here.

• Application Type: Beneath the name box is the application type information. Here choose the type of biosolid application: liquid or cake/solid. Indicate the extent of the solid portion (%solid). If the cake/solid application type is chosen, %solid defaults to 30%. If the liquid type of application is chosen, %solid defaults to 0. You can change the percentage of solid here as necessary.

• Biosolid Nutrient Analysis (mg/Kg): The middle portion of the dialog box contains an analysis of the biosolid's nitrogen (TKN), phosphorus (P), potassium (K), ammonical nitrogen NH_4-N, and nitrate nitrogen (NO_3) contents. The default is ‘zero’ for all these values. You must customize the values for your biosolid.

• $CaCO_3$ Equivalent: The bottom portion of the dialog has two options for indicating the $CaCO_3$ equivalency of the biosolid. You can specify the pH of the biosolid and/or indicate the %CCE of the biosolid in the boxes provided. These fields are enabled only if a "Lime Stabilized" digestion type is selected.

• Digestion type: The top, right corner of the "New Biosolids Group" dialog has a list to indicate the digestion type involved in the preparation of the biosolid. You can click on the list and select one of four types of digestion (Lime Stabilized, Aerobic, Anaerobic and Composed).

• Available Amount: Below the Digestion Type list are the options to indicate the available amount of biosolids (in Tons) from the current biosolid group. If you choose a limited amount of biosolids as being available then indicate the number of tons in the box provided. You can also specify unlimited biosolid availability where you need not mention the number of tons available.

The bottom right portion of this dialog box has three buttons. You can choose “Cancel” to discard any changes you made in this dialog. You can add a narrative to this biosolid group by clicking on the “Narrative” button. After you complete all the information in this dialog click on “OK” to go back to the "Biosolids Summary" dialog. This dialog lists all the biosolid groups and provides a summary of the nutrient contents. The values listed are in pounds before application losses.

Editing a Biosolids Group

Editing a biosolids group is similar to adding a group. Go to the “Biosolids” option under the “Farm” menu. It will bring you the “Biosolids Summary” dialog box. Double click on the animal group you want to edit and it will pop up the “New Biosolids Group” dialog. This box will show all the information and data already entered for the selected biosolid group. You can modify these data and click “OK” after all the changes are made.

Removing a Biosolids Group

Removing a biosolids group is straight forward. Just select the group you want to remove, and click the Delete button. This will remove the group from the “Biosolids Summary” dialog box.

Applying Biosolids to Your Farm

Applications of biosolids are planned with the "Manure Allocation" dialogs (see Chapter 7). This combination allows the planner to easily choose the best mix of manure and biosolid types for effective and efficient nutrient applications. NutMan allows you to keep track of past biosolid applications through the "Biosolids History" dialog (Figure 6.3).

Biosolids History

In the past manure section of the "Field Information" dialog box (Figure 4.3) there is a button called “Biosolids”. Click on that button to edit the biosolids application history for that field. This box contains information about the time and amount of the biosolid applications by tract and by field.

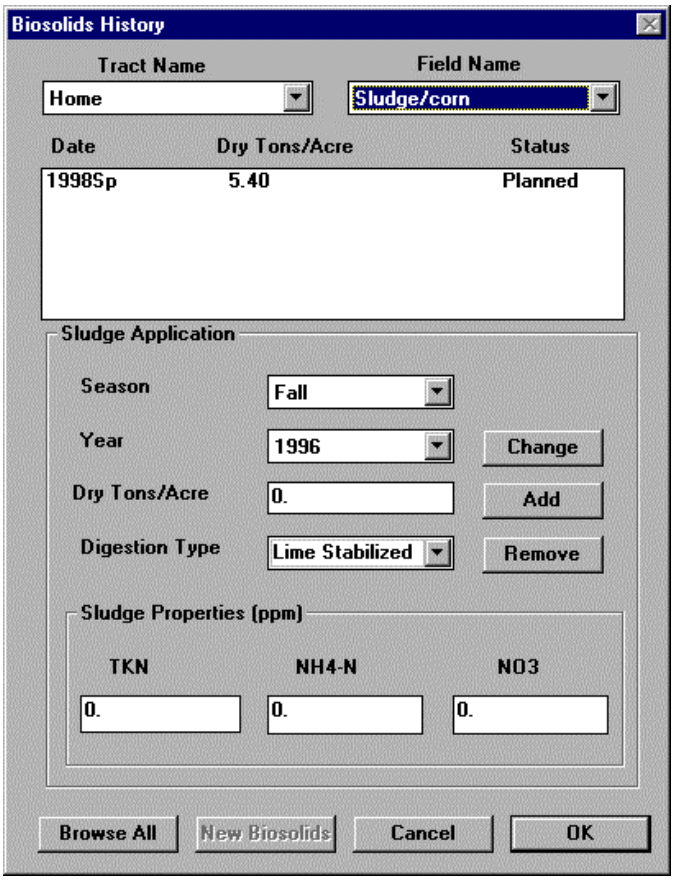

Figure 6.3 The Biosolids History Dialog Box. You can enter biosolid applications in individual fields by season in this box.

You can enter biosolid applications by season, year and quantity applied. However, you can only enter 'historical data', i.e. biosolid applications before the beginning date of the current plan. You can jump to the “Lime History” dialog or go to the “Soil Test dialog” from this dialog box. There is an option in this "Biosolids History" dialog to browse the biosolid applications across all the fields in a particular tract on your farm. Simply click on the “Browse All” button and NutMan will open the "Most Recent Biosolids Applications" dialog box (Figure 6.4) displaying information on all the fields in a tract, date when biosolids were applied, and the quantity applied.

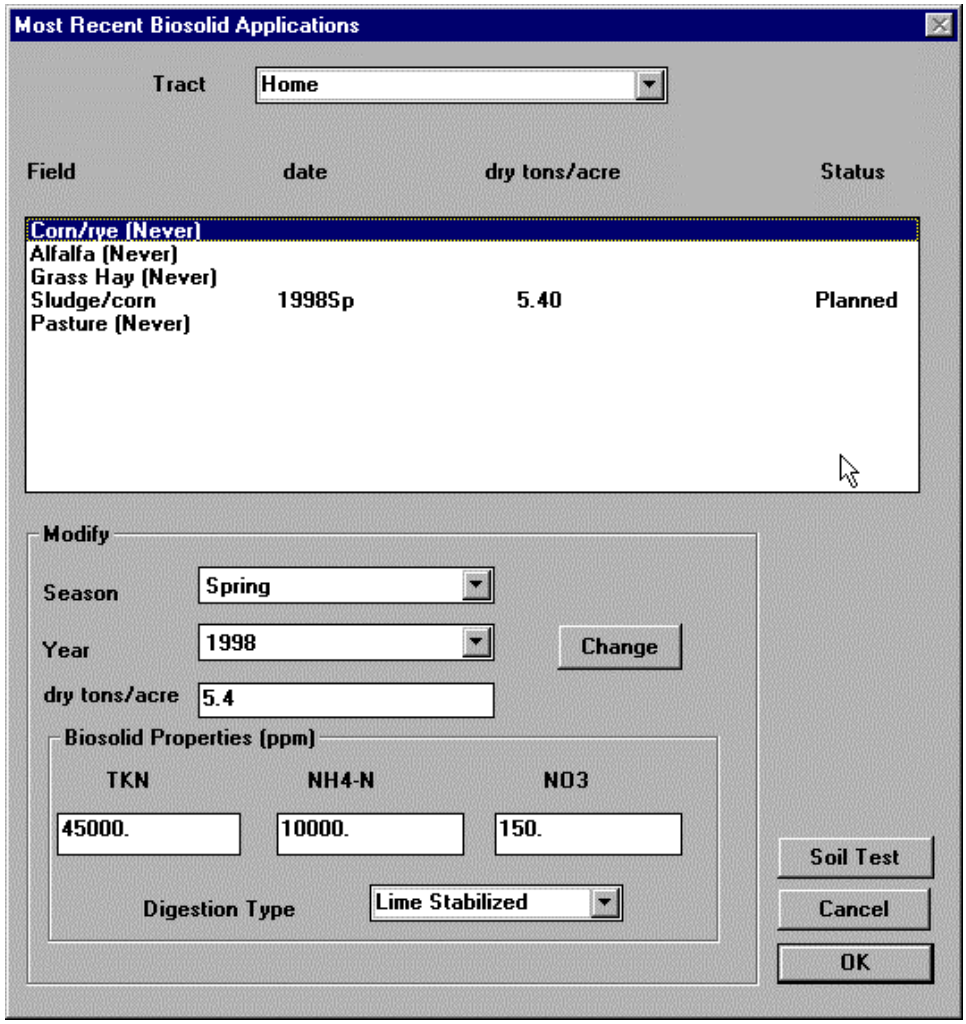

Figure 6.4 The Most Recent Biosolids Applications Dialog Box. View the most recent biosolid applications for your fields.

You may also reach the "Most Recent Biosolids Applications" dialog box by selecting "Biosolids" from the "Browse Menu" on the menu bar. You can view this information for all

the tracts in your farm by simply changing the tract name. You may not enter a new biosolid application from this dialog box. You can only edit biosolid applications prior to this plan.

Chapter 7. Nutrient Applications

The application of nutrients includes manure (including biosolids) allocations and commercial fertilizer applications. NutMan was designed to support the convention of determining the nutrient needs of a field first, then allocation manure/biosolids toward that need and lastly applying commercial fertilizer to fill the nutrient deficit. Therefore, we suggest following this convention in creating your nutrient plan. For the user's convenience, manure can be allocated by field or by season. You may select these different options in addition to the commercial fertilizer option from the “Nutrients” menu on the NutMan menu bar.

Be sure to read the "Notes" section in Chapter 3 for instructions on keeping notes of your nutrient applications.

Manure Allocations by Field

If you choose "Manure Allocation by Field" from the "Nutrients" menu, a "Manure Allocation by Field" dialog box (Figure 7.1) will open. This dialog box shows the seasons and associated crops for a particular field for each season in the nutrient management plan. From this dialog you may view and manage your manure and biosolid allocations for that particular field.

This dialog has the tract and field names at the top of the screen. It also indicates the acreage of the field just below the tract name.

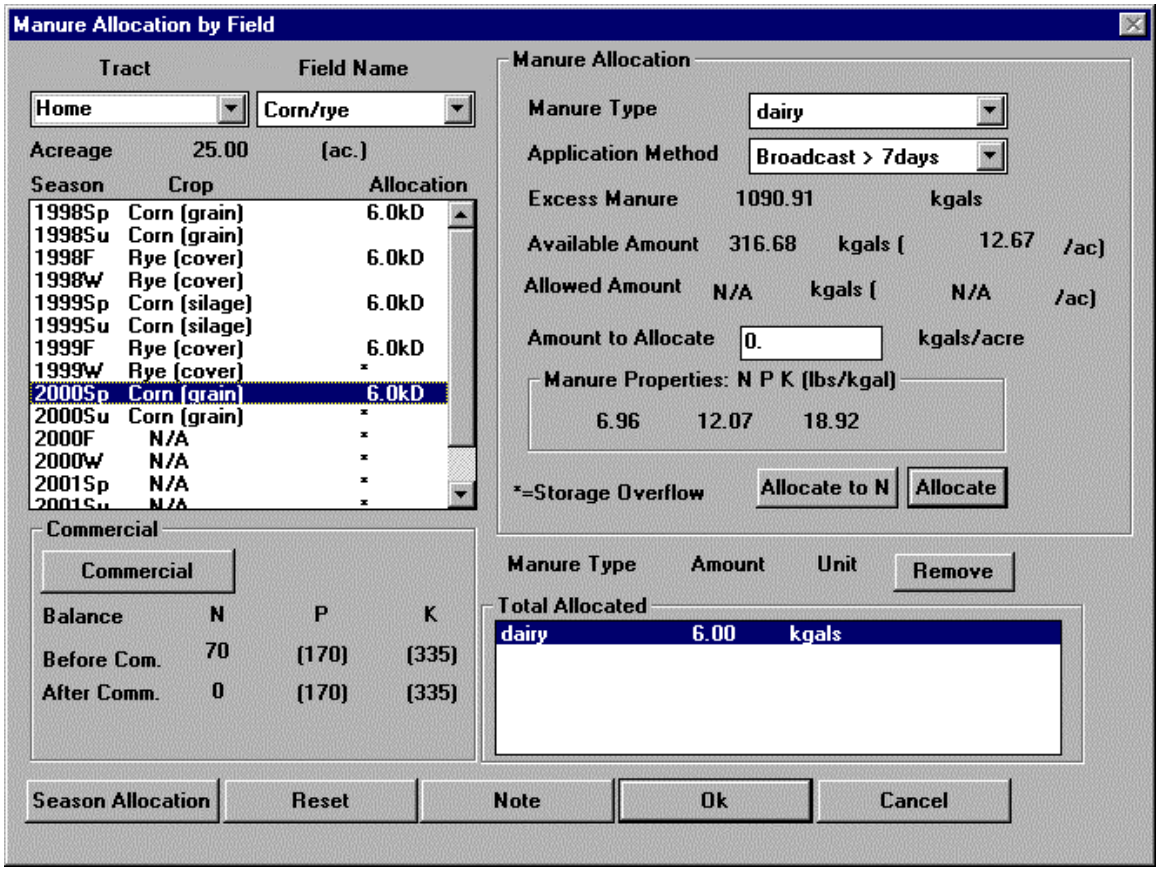

Figure 7.1 Manure Allocation by Field Dialog Box.

Allocating Manure/Biosolids

1. ***Select a Season:***

   Towards the middle left on this dialog box there is a table indicating the season, the crop name and the allocation of manure or biosolid to that crop. Season is listed by the year and a letter indicating one of Spring, Summer, Fall, or Winter. Click once on a season to select it (it should now be highlighted). Double-clicking on any particular crop or season to get to the "Manure Allocation By Season" dialog (Figure 7.2). The allocation is signified by the amount of the first type of manure/biosolid that was allocated for that season, followed by the first letter of the allocation units, an abbreviation of the manure/biosolid type, and a plus sign (+) if more than one type of manure/biosolid that was allocated for that season. Finally, if one of the manure types will overflow its storage container, a small asterisk is placed in the allocation column in that season to alert the nutrient planner. Below the table of seasons is table that lists the nutrient needs balance for the season selected. This shows before commercial fertilizer

application and after commercial fertilizer application. The "before commercial fertilizer" row is the nutrient needs balance after manure/biosolid allocations. The "after commercial fertilizer" row is the balance after both manure/biosolid and commercial fertilizer applications.

2. ***Select a Manure/Biosolid Type to Allocate:***
   Choose a type of manure or biosolid to allocate to the field for the season selected. You may choose from any of the manure/biosolid groups you defined (see Chapters 5 & 6). Also choose the method to apply the manure/biosolid to the field. NutMan will then display some information about the manure/biosolid type selected. NutMan lists (for manure only) the total amount of the selected manure type to be produced during the period of the nutrient plan as "Excess Manure". For both manure and biosolids the amount available for that season is displayed in tons and displays in parentheses the maximum allocation for the field in question. For biosolids, NutMan displays the maximum allowable allocation (set in NutMan preferences and/or "Farm Information" dialog box). Lastly, NutMan displays the nutrient analysis for the manure/biosolid type selected, modified by the application method.

3. ***Calculate an Allocation Amount:***
   First, look at the nutrient needs balance table for the season/crop selected (located beneath the seasons table). These are the target numbers for your nutrient applications. NutMan is set up to first allocate manure and biosolids to toward the nutrient needs and then make up the difference with commercial fertilizer. For this calculation, the "before commercial fertilizer" row is the target nutrient numbers. Enter an amount to allocate in the "Amount to Allocate" box. Then click the "Allocate button. This amount should be no more than the available or allowable amounts (whichever is valid). NutMan can automatically calculate a suggested amount based on the nitrogen content of the manure/biosolid and the nitrogen nutrient need. To use this feature, click the "Allocate to N" button and then the "Allocate" button.

   NutMan will display a warning if a manure/biosolid allocation exceeds the nitrogen nutrient need. However, you can still go ahead with the allocation.

   Whenever you choose to allocate a biosolid, NutMan prompts you to, "Check that this allocation does not exceed soil pH limits." Click the "OK" button, then

click somewhere else on the screen. The biosolid allocation should now be displayed in the total allocation section.

Once a manure/biosolid allocation has been made, it will be indicated in the season table (described above), in the nutrient need balance table (with excess amounts in parentheses), and in the total manure/biosolid allocation table (shows the total allocated manure/biosolid on the field in the season selected). More than one manure/biosolid allocation can be made per season to the same field. You may choose different manure/biosolid types or even multiple applications of the same type within a season. To remove an allocation from a season, be sure the right season is selected in the season table, select the allocation to be removed from the total manure/biosolid table, and then click the "Remove" button or just double-click the allocation. All allocations (for ALL seasons in the nutrient plan) in a field can be cleared by clicking on the “Reset” button.

Caution! There is no 'undo' when you click the "Reset" button. Remember that the "Reset" button clears all the allocations for the field for every season in the nutrient plan.

NutMan will also calculate the after commercial fertilizer nutrient need balance for you (in the nutrient needs balance table), once you have defined an application (see Commercial Fertilizer Applications below). You can go to the "Seasonal Manure Allocation" and "Commercial Fertilizer Application" dialog boxes by clicking the corresponding buttons. These dialog boxes will be displayed with the currently selected field and season.

Manure Allocation by Season

If you choose "Manure Allocation by Season" from the "Nutrients" menu, the "Manure Allocation by Season" dialog box (Figure 7.2) will appear showing a list of manure/biosolid allocations for all fields in a particular season. It will list all the information about that season along with the tract/field name, acreage, crop, nutrient balance and the amount of the first manure/biosolid allocation.

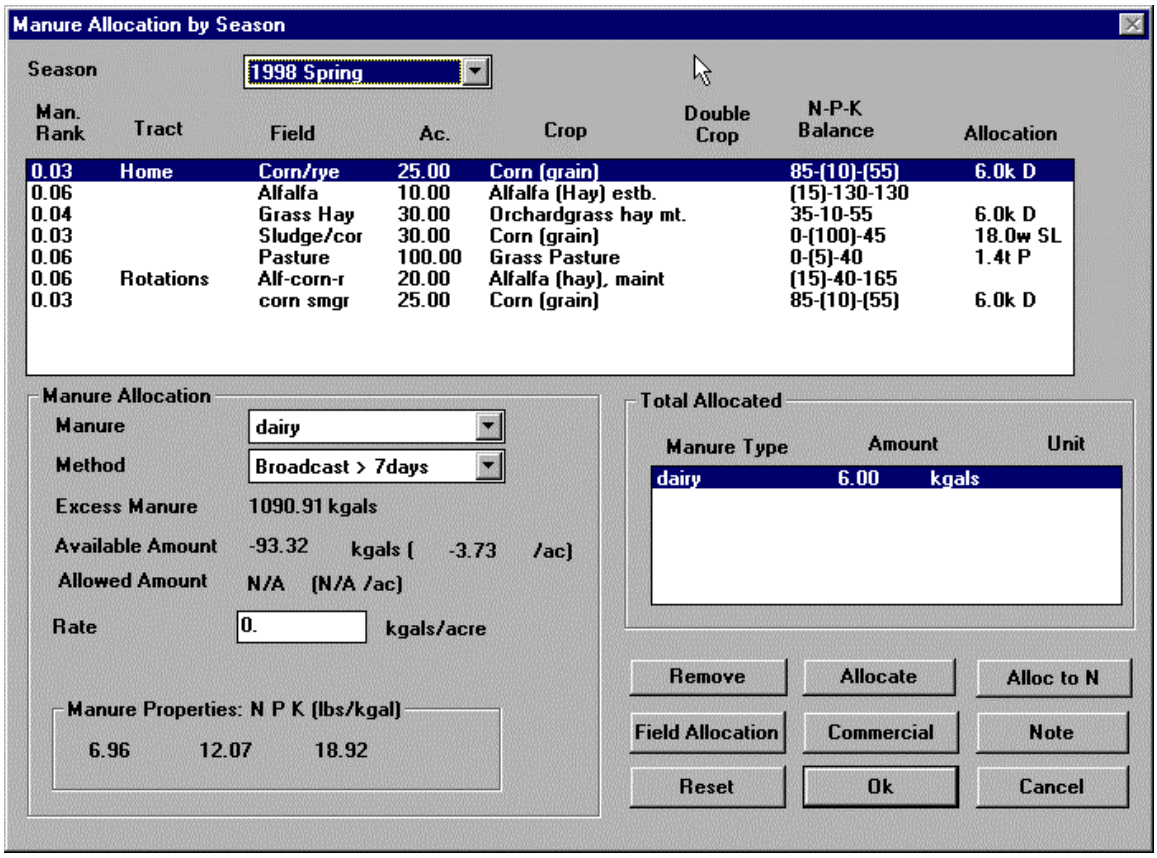

Figure 7.2 Manure Allocation by Season Dialog.

The top half of this dialog box has a table that groups all the manure allocations by a single season. Changing the season in the "Season" list will allow you to view all the manure allocations in another season. Other information and tasks are similar to the "Field Allocation" dialog box. By clicking the "Reset" button, all the manure allocations in the selected season (for ALL fields) will be cleared.

Caution! There is no 'undo' when you click the "Reset" button. Remember that the "Reset" button clears all the allocations for the field for every season in the nutrient plan.

The bottom half of this screen has a "Manure Allocation" section to the left and the "Total Allocated" section to the right. These sections are the same as those described in the "Manure Allocation by Field" dialog.

From the "Manure Allocation by Season" dialog, you can go to the "Field Allocation" and "Commercial Fertilizer Application" dialog boxes by clicking the corresponding buttons. These dialog boxes will be displayed with the currently selected season and field.

Commercial Fertilizer Applications

If you choose "Commercial Fertilizer" from the "Nutrients" menu, the "Commercial Fertilizer by Field" dialog box (Figure 7.3) will appear. It shows all the seasons/crops with their nutrient balances in a single field. Selecting a season/crop will list all the commercial fertilizer applications for that season/crop in the "Fertilizer List" section.

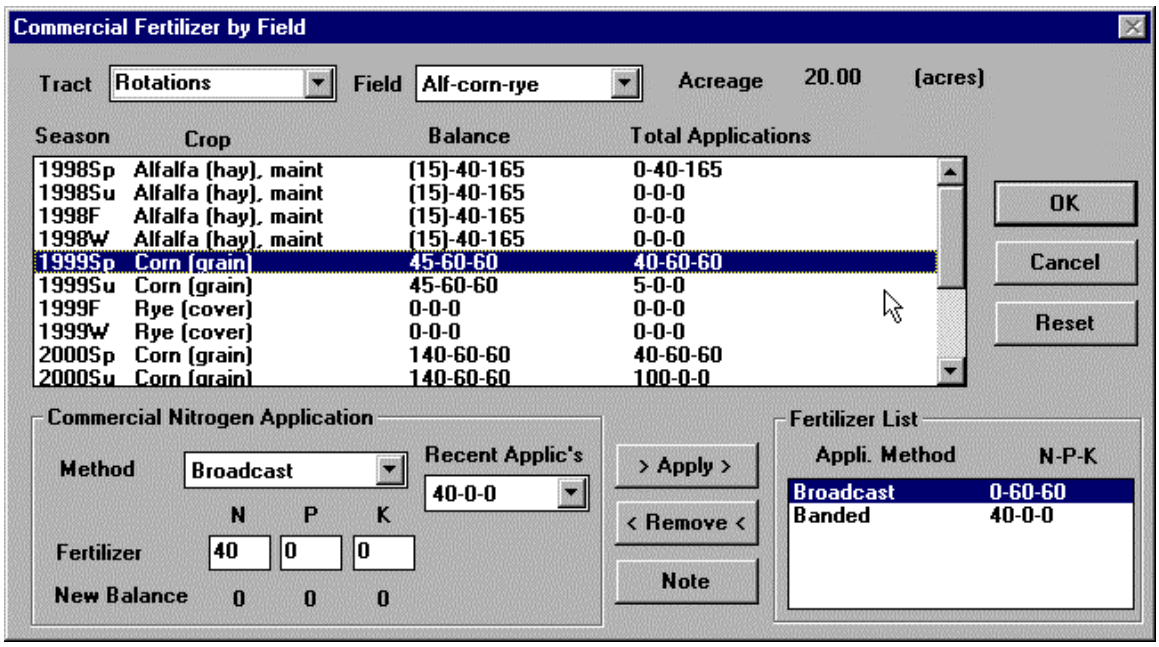

Figure 7.3 The Commercial Fertilizer by Field Dialog Box.

This dialog has the Tract name, the Field name and the acreage displayed across the top. The middle portion of the screen has a table that lists seasonal allocations of commercial fertilizer in the field. This table has the season (year and a suffix indicating the season), crop, nutrient balance after manure/biosolid allocations, and the total commercial fertilizer applications received in that season.

Applying Commercial Fertilizer

1. ***Select the Season:***

   At the top of this dialog box there is a table indicating the season, crop name, nutrient balance after manure/biosolid allocations, and the total commercial fertilizer applications received in that season. Season is listed by the year and a letter indicating one of Spring, Summer, Fall, or Winter. Click once on a season to select it (it should now be highlighted).

2. ***Select an Application Method:***

   The bottom left of this dialog box has the fertilizer application section. Here you must specify an application method (broadcast, banded, topdress, or sidedress). Select one from the drop-down list.

3. ***Calculate an Application Amount:***

   From the fertilizer application section, note the new nutrient balance. It should be the same as the balance after manure/biosolid allocations displayed in the upper section of the dialog box. This is the target amount of N, P, and K to apply. Chose an fertilizer application rate from blends that you have available that will best meet the nutrient needs of the crop. Enter that blend of N, P, and K into the appropriate area. You could also a select a recent application from the recent application drop-down list. Next, click on the "Apply" button. The application you just defined should show up in the fertilizer list on the bottom right. The new balance should be recalculated on the bottom left and the application should be added to the total application for the corresponding season at the top of the dialog box.

   To remove a fertilizer application, be sure that the correct tract, field, and season are selected at the top of the dialog box. Then from the fertilizer list in the lower right, select the application to remove, and click on the "Remove" button.

Chapter 8. Plan Output

Nutrient Management Job Sheet

Once you have completed the Farm, Manure, Biosolid, and Nutrient information, the program will show a “Job Sheet” in the background. The Job Sheet shows the current nutrient management plan in a table. Each tract has a Job Sheet table. Each Job Sheet table has a heading including the name of the farm, tract, and county. It includes the following columns: field CFSA No., name, size (acreage), year of planting, crops in the rotation, nutrient needs, manure rate & type (season), incorporation time (IT), applied manure N-P-K, nutrient balances (NET), commercial N-P-K, and list of note numbers. All numbered notes will be shown in their entirety at the bottom of a page.

In addition to the Job Sheet, the program generates several other summaries as part of its output. These can be accessed under the “View” menu in the NutMan program menu bar. A brief description of each of these options follows.

Farm Summary

The "Farm Information" option under the “View” menu shows a summary of the farm. It displays the current plan duration, the name and location of the farm, the name of the specialist and all the narratives associated with the “Farm Information” dialog. This sheet also lists the tract names, location and their CFSA number. Field level information is not summarized under this option.

Field Summaries

This option gives you a summary of all the information you would have entered for your fields. It lists the total acreage, the location, soil test data, the hydrologic group and the slope class of each field in your farm by the tract name and the field name. It also lists soil warnings, the crop rotation in the field and the most recent lime application information in the summary.

Manure Schedule

The "Manure Schedule" report gives you a manure spreading summary in a format. The season in which the manure is spread, the field on which manure is applied, the area/acreage of the field, rate of application/acre and the total manure application in that field (for that season!). It also lists the crop in that season and gives you a running total of manure applied by the manure type.

Manure Summaries

The "Manure Summaries" option gives you an overview of the manure produced on your farm based on the livestock information provided. It summarizes the number of animal groups and the number of animals in each group. It breaks up the total manure produced by season, gives you an analysis of the manure (TKN, P_2O_5, K_2O and NH_4) and tabulates the plant available nutrients under “Immediate Incorporation”, “Surface Applied” and “Residual N” categories.

Productivity Report

The "Productivity" report indicates productivity classes for major crops (based on soil series) by field and also indicates the environmental risks associated with individual fields. This report also indicated what the productivity classes mean (in terms of yield/acre) in a tabular format.

Soil Test

The "Soil Test Summary" lists the soil test results (P_2O_5, K_2O and pH) and includes lime data by date and tons per application. Results are listed by field names under each tract on the farm.

Application Summary

The "Application Summary" tabulates the list of manure and commercial fertilizer applications given by crop. It lists the farm name, the planner, the crop and the year in which it is raised. Each crop gets a separate summary of its nutrient applications in this report.

Printing Your Nutrient Management Plans

To print these reports, first choose the window (report) you want to print by opening it and bringing it to the foreground. From the "File" menu, choose "Print Preview" to preview your plan on the screen. You may adjust some settings such as the range of the printing pages, page orientation, or printer dpi from the "Page Setup" option in the "File" menu. When you are satisfied with the setup, choose "Print" from the "File" menu (or toolbar) to print the plan.

If you are having problems with the margins of your printed reports, be sure that you are printing at 300 dpi.